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Titre du projet *(en français)*	Arbres Aléatoires (continus) et Applications
Titre du projet/Proposal title *(en anglais)*	(Continuum) Random Trees and Applications

Les pages seront numérotées et l'acronyme du projet devra figurer sur toutes les pages du document en pied de page.
Un sommaire du document est bienvenu

S'il s'agit d'un projet déposé dans le cadre d'un accord de coopération internationale*, préciser avec quelle agence étrangère :
☐ National Natural Science Foundation of China (NSFC)
☐ Japan Society for the Promotion of Science (JSPS)
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1. Programme scientifique / Description du projet *Technical and scientific description of the proposal*

1.1 Problème posé/Rationale *(1/2 page maximum)*

Présentation générale du problème qu'il est proposé de traiter dans le projet et du cadre de travail dans lequel il sera effectué.

Intuitively a Continuum Random Tree (CRT) describes the whole genealogy of a huge population of individuals (or branching particles) with infinitesimal life span and infinitesimal mass. It also takes into account the displacement or evolution of the population. From this description, it is clear that the CRT is a natural limit in population dynamics. However, since its introduction by Aldous in the early 1990, it appears that the Aldous Brownian CRT arises as a universal limit in many settings involving branching particles or random trees. In some sense, Brownian CRT plays the same central role as Brownian motion for random processes. Let us mention some applications of the CRT which have been proved to be very fruitful: the CRT is related to a family of non linear partial differential equations, it appears as limit of voter models, contact processes, random

discrete trees, combinatorics for physics or theoretical informatics, heavy traffic models, coalescent and fragmentation processes, population dynamics, percolation, ...

We aim to investigate new applications of CRT, which have been recently pointed out. In particular we will study in deeper details the link with planar maps, percolation, as well as investigate the links with general fragmentations. We also want to study new processes related to CRT such as CRT valued processes or random walks on random trees.

1.2 Contexte et enjeux du projet/*Background, objective, issues and hypothesis* *(1 à 3 pages maximum)*

*Décrire **le contexte** en dressant un **état de l'art national et international** incluant les références nécessaires et préciser les **enjeux scientifiques** du projet.*

Continuum Random Trees (CRT) have been introduced by Aldous [Al90, Al91, Al93] in the early 1990. Since then, the CRT has become popular mainly because of the increasing amount of related applications, see the surveys [Sl02] and [LG05] as well as the references therein.

PLANAR MAPS

A planar map is a graph properly embedded in a two-dimensional surface S, considered up to homeomorphisms; triangulations and quadrangulations of the sphere are examples of planar maps. The study of maps started in the early 60's in connection with the 4-color conjecture. Since then, completely unexpected applications have emerged: maps now occur in physics (quantum gravity) as random discretizations of surfaces, in mathematics as Grothendieck's "dessins d'enfants", in computer science (computational geometry) as data structures that encode various spatial objects (Google-Earth, surfaces, complex graphs...).

The project we present aims at developing the understanding of random maps in two complementary directions: the first direction focuses on asymptotic properties of maps, when their size goes to infinity; this includes the study of the limiting objects. The second objective is to provide a better understanding of the combinatorics of maps, in particular of maps enriched with additional structures, like orientations, colorings, and more generally statistical physics models. Both directions converge when studying, for instance, the average number of 4-colorings of planar maps of large size.

PERCOLATION

Percolation models are intensively studied. Let us recall that Hara and Slade [HaSl00] proved that the scaling limit for the mass distribution of the incipient infinite cluster in high-dimensional percolation, at the critical value, is the integrated super-Brownian excursion (ISE), which is easily connected to the CRT. The approach of pruning the CRT, developped by Abraham and Delmas [AbDe08] could lead to a better understanding of the evolution of the cluster containing the origin, when the probability percolation decreases to the critical value.

FRAGMENTATIONS.

Fragmentation processes have been intensively studied by Bertoin [Be06]. They provide interesting random models, with applications in physics and informatics. The links between fragmentations and CRT goes back to Aldous and Pitman [AlPi98a], see also Bertoin [Be00]. Recently Miermont [Mi04,Mi05] has constructed a fragmentation from CRT with stable branching. This procedure has been partially generalized by Abraham and Delmas [AbDe08] for a large family of CRT using snakes introduced by the seminal work of Le Gall and Le Jan [LGLJ98]. Hence, it will be interesting to get a whole picture of the fragmentation processes linked to general CRT. New phenomenons on fragmentation processes are observed in this case, see Abraham and Delmas [AbDe07]. Those recent results are encouraging. They also provide non trivial examples of fragmentation processes for which theoretical results are interesting.

CRT VALUED PROCESSES AND RANDOM WALK ON RANDOM TREES.

The CRT is a complex random object. It has been defined in a static way. One natural question is to consider a CRT valued process, which would be the analogue of the random trees valued process studied by Aldous and Pitman [AlPi98b]. This will be a different approach to let evolve in time the CRT as the one developped for instance by Evans and Winter [EvWi06]. The mathematical tools are now ready to undertake such a research at an international level. A different approach to study the regularity of the CRT is to study a random walk on its approximation given by random discrete trees. A lot of results are known for random walks on certain discrete random trees, see Lyons [Ly90], or on percolation clusters, see Grimmett, Kesten and Zhang [GrKeZh93]. Those technics already gave some results on the existence and regularity of the density of the Integrated superBrownian Excursion (ISE) which is closely related to the CRT, see Bousquet-Mélou and Janson [BoJa06]. It seems that further results in this direction could improve the understanding of on CRT.

CONCLUSION

The study of random trees and related processes is an international highly competitive domain. Our goal is to obtain significant and new results in this is a very active domain. The four main subjects of this proposal are concerned with CRT and its applications. CRT are used for different purposes and studied with different tools. As the subjects are complementary, we think that our collaboration will give us an advantage and will increase the research of each partner.

1.3 Objectifs et caractère ambitieux/novateur du projet/*Specific aims, highlight of the originality and novelty of the project* *(1 à 2 pages maximum)*

*Décrire les **objectifs scientifiques/technologiques** du projet.*
*Présenter l'**avancée scientifique** attendue. Préciser l'originalité et les ambitions du projet.*
*Détailler les **verrous scientifiques et technologiques** à lever par la réalisation du projet.*

We intend to give new results on CRT, develop new applications and obtain new results on known applications of CRT. We will mainly focus on the following subjects: planar maps, percolation, fragmentation, random walk on CRT and CRT valued process. Since this project will bring together for a significant period of time people working on related topics but with different approaches, we hope to really get original results. In particular, according to our different collaborations, we are aware of connected fields such as biology (dynamics of population, phylogeny, coalescent process), combinatorics and algorithm analysis, statistical physics (Ising model and planar maps), physics (fragmentation process), and thus we will be able to connect and develop our research accordingly.

According to the realizations of the permanents of this project, their motivation and their knowledge of this field and related connexion, we reasonably hope to publish our results in top quality international journals such as Annales Inst. H. Poincaré, Annals of Applied Probab., Annals of Probab., Random Structures and Algorithm, Stochastic Process. Appl., Probab. Theo. Rel. Fields. As the subjects and open questions are already at an international level, the results we already outline will get the same standards.

1.4 Description des travaux : programme scientifique/*For each specific aim: a proposed work plan should be described (including preliminary data, work packages and deliverables)* *(10 pages maximum)*

Décrire le ***programme de travail décomposé en tâches en cohérence avec les objectifs poursuivis****. Les tâches représentent les grandes phases du projet. Elles sont en nombre restreint.*

Pour chaque tâche, préciser :

- *les objectifs de la tâche*
- *le programme détaillé des travaux correspondants.*

We now describe the proposed work according to the four subjects: planar maps, percolation, fragmentations and CRT valued processes and random walk on random trees. Notice the four subjects will be studied at the same time, and they will benefit from each other.

Structure and asymptotic behaviour of planar maps

Coordinator: J.F. Marckert

Attendants: O. Bernardi, C. Bordenave, M. Bousquet-Mélou, P. Chassaing, M. Krikun, J.-F. Le Gall, G. Miermont.

A better understanding of the limiting behaviour of large random maps is a fundamental question in physics, where maps serve as discretizations of fluctuating surfaces, in the context of 2D quantum gravity. In probability, it raises many important questions. Several results have emerged in the last few years about the asymptotic behaviour of large random maps; an important part of them have been obtained by members of our project (Chassaing, Krikun, Le Gall, Marckert, Miermont). Their work partly relies on recent bijections (Schaeffer [Sc98] and Bouttier, Di Francesco and Guitter [BoDiGu04]) between maps and certain labelled trees, which encode in a simple way the geometry of maps. Then, a detailed study of the structure of random labelled trees, or 'spatial trees', is required. A prominent result in this field is that of Le Gall & Paulin [LePa07] (rederived by Miermont), establishing that some families of maps – among which uniform quadrangulations with n faces –

suitably rescaled, converge in distribution along a subsequence, towards a random metric space with spherical topology. The convergence holds for the Gromov-Hausdorff topology, which is a geometrical tool allowing to compare compact metric spaces. The works of Marckert-Miermont [MaMi07], Miermont-Weill [MiWe07], Miermont [Mi06], indicate the universal nature of these results.

> Objective: Prove the uniqueness and universality of the limiting metric of rescaled regular maps, such as the regular Boltzmann maps introduced in Marckert & Miermont [MaMi07]. Compare the limit with the Brownian map introduced by Marckert & Mokkadem [MaMo06].

This objective is at the center of the probabilistic study of random maps, and is related to various questions: does the limiting map have an intrinsic characterization, not referring to the continuum random tree? Does there exist a link with the Gaussian free field? Is it possible to characterize the limiting metric, for example the matrix D(U_i,U_j) giving the distances between k points chosen at random in the limiting object? What about the geometry of the geodesics in this map? Is there a unique geodesic between two random points?
We believe that some of these questions, which stand among the most important in the domain, can be solved or approached using variants of Schaeffer's bijections (as those introduced recently by Miermont, and Bouttier-Guitter, or also Chapuy-Marcus-Schaeffer for maps of non-zero genus). Another question, closely related to these objectives, is to derive quantitative results about large maps: little is known about the characteristics of large maps, apart from the computation of the limiting radius and profile, obtained first in the case of quadrangulations by Chassaing & Schaeffer, and generalized afterwards to more general families of maps by Marckert & Miermont, Miermont & Weill, Miermont, Weill.

The universality of the limit as expressed in the above objective, should be taken with a grain of salt: we think that all regular models have the same limit, but as shown in a recent work by Albenque & Marckert, a natural model of 'stack triangulations', admits as a limit the continuum random tree (CRT), which is very different from the conjectured limit of random triangulations. One of our objectives, very much related to the preceding one, is the following:

> Objective: Find necessary and sufficient conditions on families of discrete planar maps ensuring the convergence to the Brownian map. More generally, find the possible limiting distributions of rescaled maps. The above mentioned result indicates the existence of maps whose limits are interpolations of the CRT and the Brownian map.

A third objective is connected to 2D quantum gravity and to the KPZ equation found in the physics literature. The latter predicts an explicit connection between critical exponents for statistical mechanics models on regular 2-dimensional lattices and on large/infinite random maps. What serves naturally as a model of infinite maps is the limit of maps for the *local topology*: Angel & Schramm [AnSc03] showed that some models of uniform triangulations with n faces have a limiting behaviour around their root, when n goes to infinity. Chassaing & Durhuus [ChDu06] then proved a similar result for quadrangulations. By the extension theorem of Kolmogorov this defines a measure on infinite triangulations (or quadrangulations), which has been simply described by Krikun [Kr05]. The limiting random infinite planar map that arises behaves in some respects in a simpler manner than the regular lattice, as it has been observed by Angel for percolation on triangulations.

> Objective: Understand the behaviour of some statistical physics models on large or infinite random maps, like percolation, Ising and Potts models, spanning trees, self-avoiding walks.

The KPZ equation suggests that some of the limits of these rescaled models may be described in terms of conformally invariant processes, such as the SLE. The study of statistical mechanics models on random planar maps originates in 2D *quantum gravity*: (very) roughly speaking, the gravity transforms the regular metric of a

square grid into that of a random quadrangulation. In this framework, instead of studying the *partition function* (the sum of the Boltzmann weights of all possible configurations) of a regular grid of size n, one considers the *sum* of partitions functions of all maps of size n. In combinatorial terms, this boils down to enumerating planar maps *weighted by their partition function.* Several models have been solved recently using one of the three main approaches that are used to count unweighted maps: Tutte's original recursive approach from the 60's, the matrix integral approach developed by physicists in the 70-80's, and the more recent bijective approach initiated by Schaeffer. For instance, self-avoiding walks and loops on maps (Krikun, Duplantier), or the Ising model (Kazakov, Bousquet-Mélou—Schaeffer [Bo-Sc03]) can be addressed using such techniques.

The underlying series counting weighted maps turn out to be algebraic for these models, and it seems now that the main obstacle the three available methods have to face is *going beyond algebraic models.* The benchmark for such models in the q-state Potts model, whose solution boils down to counting maps weighted by their *Tutte polynomial* (a bivariate extension of the more famous *chromatic polynomial*, which counts proper colorings of a graph with q colors). It is believed that the associated series is not algebraic, although its specialization at certain values of q (the Tutte-Beraha values) are likely to be algebraic. These beliefs are based on a 10 years long study of Tutte on the enumeration of planar triangulations weighted by their chromatic polynomial, and on partial results obtained by matrix integrals. We think we now have, thanks to recent work done on certain types of functional equations (e.g. [Bo05]), a good opportunity to get a better understanding of Tutte's solution and to generalize it. Another possible starting point is a recent description of the Tutte polynomial of a graph in terms of one of its embeddings – a map (Bernardi).

(Percolation is addressed in greater detail elsewhere in this project.)

Finally, we give the utmost importance to new combinatorial results on maps, since they may give a handle on structural properties that were so far out of reach. Recall that Schaeffer's bijective approach is crucial in the asymptotic results on maps presented above. We thus wish to conclude with a very general objective, which of course is deeply correlated to the previous ones.

Objective: Improve the understanding of the combinatorics of maps.

One typical question in this direction would be to understand combinatorially the non-linear differential equation obtained by Tutte for triangulations weighted by their chromatic polynomial. This equation is a red hearing in the world of maps, so far dominated by algebraic equations.

Fragmentation and Pruning of Continuum trees.

Coordinator: R. Abraham

Attendants: J.F. Delmas, B. Haas, G. Miermont, G. Voisin, L. Serlet.

The first pruning of a continuum random tree appears in [AlPi1998]. The idea is to add some Poissonian marks on the skeleton of Aldous' Brownian CRT and then cut the tree along these marks. The « masses » of the subtrees obtained by this procedure evolve when moving the Poisson parameter of the marks, as the standard additive coalescent. This idea has then be used by several authors in order to construct fragmentation processes, see [AbSe2002, Mi2003, Mi2005, De2007, AbDe2008].

This construction is a powerful tools for studying properties of these fragmentations processes. For instance, in [AbDe2007], we are able to study some asymptotics at a fixed time for the number of the size of the small fragments of such a fragmentation. We aim in this project to go further in the study of these fragmentations.

A first point is to study Miermont's fragmentation constructed in [Mi2003] near its extinction time. Indeed, this fragmentation is self-similar with negative index and it is known that all the mass will disappear in finite time. We are interested in the asymptotic size of the last fragment and of the others fragments and we would like to generalize the result to others self-similar fragmentations with negative index.

It will be interesting also to study branching Markov chain, which are motivated by genetics, using fragmentation trees introduced by Haas and Miermont [HaMi04], see also [HaMiPiWi08]. This point of view should give new and global results on convergence of family of random trees, for example the beta-fragmentation trees introduced by Aldous. A first step in this program is to study pure death Markov chain and more precisely their death time under some regularity condition on their transition matrix. A related study has been done in allelic partition models, see [GnYa08], [IkMö08] and [DeDhSi08].

Bertoin's pioneer work on fragmentation processes focus on self-similar fragmentations as their are constructed from homogeneous fragmentations (the fragmentation mechanism does not depend on the size of the fragment, these fragmentations are easy to construct using independent Poisson point processes) via adequate time-change. In [De2007, AbDe2008], the fragmentations constructed from the pruning of a CRT associated with a Lévy process are not self-similar but in the case of a stable Lévy process. These are the first non-trivial non-homogeneous fragmentations. It is then natural to ask if the properties of self-similar fragmentations remain valid for general fragmentations, or how these properties are modified.

The law of a self-similar fragmentation is characterized by the index of self-similarity, an erosion coefficient and a dislocation measure that describes sudden dislocations of a single fragment of mass 1. In the case of general fragmentations a family of dislocation measures can be defined in the same manner. This family is indexed by the size of the fragment that undergoes the dislocation. In the case of self-similar fragmentations, this family gathers the information of the dislocation measure and the index of self-similarity. The question is, as there is no erosion in our cases, does this family of measures characterize the law of the fragmentation process ? A solution would be to compute the transition probabilities of the fragmentation process and express them uniquely in term of the dislocation measures.

The pruning of a tree has its own interest as the marks on the tree can be seen as mutations that appeared on the lineage of an individual. Therefore, this construction can be viewed as a special case of multi-type continuous branching processes. G. Voisin's PHD thesis consists in constructing a general pruning of a CRT associated with a Lévy process and to study some properties of the multi-type population this construction models.

Random trees, random maps and percolation

Coordinator: P. Chassaing

Attendants: J.-F. Delmas, O. Garet, J.-B. Gouere, M. Krikun, R. Marchand, G. Miermont.

1) Percolation was introduced by Broadbent and Hammersley [BrHa57] in 1957 as a model of fluid flow in a random medium. There are various form of percolation : a first motivation of our federating project is to understand better the geometry of the connected clusters of occupied bonds in bond percolation during the phase transition. In bond percolation on the infinite graph with vertex set Z^d and the usual edge set, edges are called *bonds* and each bond *is open* with probability p or closed with probability $1 - p$, *independently*. Open bonds allow fluid flow, whereas closed bonds do not. For $d \geq 2$, there is a critical value p_c in $(0, 1)$ such that for $p < p_c$ there is no infinite cluster with probability 1, while for $p > p_c$ there exists a unique infinite cluster with

probability 1 (“percolation occurs”). The geometry of the giant cluster around this phase transition has attracted quite some attention. For instance, for the supercritical case $p > pc$, the random walk on the infinite cluster has a long time behavior similar to the random walk on Zd, as confirmed in several way since the pioneering work of Kesten [Ke86], by De Masi, Ferrari, Goldstein and Wick, Grimmett, Kesten and Zhang [DeFeGoWi89], Mathieu and Remy [MaRe04], Barlow [Ba04], Sznitman [SZ03] and many others. These results gives indications that the geometry of the supercritical infinite cluster is in some sense close to the geometry of Zd. On the other hand, there is no infinite cluster when $p = pc$, when $d > 19$, but Hara and Slade (2000) obtained strong evidence that the scaling limit for the mass distribution is the integrated super-Brownian excursion (ISE). This leads to believe that the approach of pruning the continuum random tree, developped by Abraham and Delmas, could yield a better understanding of the evolution of the cluster containing the origin, when p decreases from pc.

2) Percolation on random maps.
Another instance of percolation that rises interesting problems related to random trees and maps is site percolation. In site percolation, each vertex (called site) of the lattice is colored blue (resp. red) with probability p (resp. $1 - p$), independently of each other. The crossing probabilities are the probabilities that two given segments of the boundary of the map (here a triangulation) are connected by a blue (resp. red) path. A variant of these crossing probabilities can be defined on quadrangulations. Angel & Schramm [AnSc03] proved that some models of uniform triangulations with n faces converge to variants of a uniform infinite planar *triangulation*, the UIPT, when n goes to infinity. Recently, Angel [An08] gave a formula for crossing probabilities on the half plane UIPT. Chassaing and Durhuus [ChDu06], using Schaeffer bijection with trees, and, Krikun [Kr05], using an embedded branching process, gave different descriptions and properties of the uniform infinite planar *quadrangulation (UIPQ)*, leading to a somewhat more precise understanding of the geometry of the UIPQ. We want to translate these informations about the geometry of the UIPQ into a better understanding of percolation and other models of statistical physics on the UIPQ.

CRT valued process and random walk on random trees
Coordinator: J.-F. Delmas
Attendants: R. Abraham, J. Berestycki, M. Bousquet-Mélou, T. Duquesne, J.-F. Le Gall, G. Miermont.

Markov chains that move through a space of finite trees are an important ingredient for several algorithms in phylogenetic analysis. Usually, chains are based on a set of simple rearrangements that transform a tree into a “neighboring” tree. A more complex procedure is studied by Evans and Winter [EvWi06]. They construct and analyze a reversible tree-valued Markov process, by considering the so-called prune and re-graft algorithm. Using a Gromov-Hausdorff type distance to metrize the space whose elements are compact real trees equipped with a probability measure, they prove that the CRT is the stationnary distribution of a process, which appears as the rescaled limit of the prune and re-graft process on discrete trees. This motivates a more general study of CRT valued process. We intend to use the pruning procedure to reduce a CRT and its dual procedure the proportionnal immigration to let it grow again, so that one gets a CRT valued process. The difficult part appears when one wants to consider continously infinitesimal prunning and immigration.

By considering only immigration or only prunning procedure of CRT, we get the analogue of the tree valued Markov chain introduced by Aldous and Pitman [AlPi98b]. In particular, using the immigration procedure, it is possible to let the CRT grows up to explosion. Another interesting question is then to study the CRT just before explosion. We conjecture that it is equal to the CRT with an infinite spine pruned with a random intensity. This approach will give a new insight in [AlPi98b] an will allow to generalize their results to more general Galton

Watson trees using in particular a pruning procedure at nodes. We also plan to study other growth procedure for the CRT, such as the leaf and mass erasure which give convergence to the Lévy forest, see also [DuWi07].

One of our objectives is the quantitative study of random walks on random trees via a discrete combinatorial approach. One typical example is the simple random walk on a Galton-Watson tree conditioned to have size n, starting from the root of the tree. We think that some properties of this walk – first return to the root, height... – are accessible via a detailed enumerative approach, in the annealed context where properties are averaged over all trees of size n. In the limit where n goes to infinity, these simple walks have been recently proved to converge to the Brownian motion on the continuous random tree (Croydon 07). Discrete results are thus expected to provide, in the limit, quantitative informations on this process.

Eventually, we are also interested on fractal properties of superprocesses with general branching mechanism and Lévy trees, and more precisely on exact density estimates of the mass measure and level set measure of stable Lévy trees (exact Hausdorff and packing measures, thin and thick points and the multi-fractal properties of these measures). We also want to study the exact packing measure of the total range of general superprocesses and to get a precise description of the multi-fractal spectrum of super-Brownian motions with stable branching mechanism.

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1.5 Résultats escomptés et retombées attendues/*Expected results and potential impact* *(1/2 page maximum)*

(Plus spécifiquement pour les programmes partenariaux organismes de recherche/entreprises)
*Présenter les **résultats escomptés** en proposant si possible des critères de réussite et d'évaluation adaptés au type de projet, permettant d'évaluer les résultats, tâche par tâche et globalement en fin de projet.*

*Présenter les **retombées attendues** en précisant pour les partenaires concernés :*

- *la valorisation des résultats attendus, connaissances à protéger ou à diffuser, …*
- *les retombées scientifiques, techniques, industrielles, économiques…*
- *pour les bases de données, les modes de stockage et de maintenance ainsi que les communautés bénéficiaires*

We plan that the collaboration between the partners will lead to significant publications in international top level journals and to talks in international conferences or workshops. The research will also sustain PhD thesis and a PostDoc program.

At the end of this project, we hope to have a more detailed understanding of the CRT and its applications, as well as new applications in combinatorics, biology and physics. This project should naturally lead us to increase the number of our international collaborations on this subject.

1.6 Organisation du projet/*Project flow*

Préciser les aspects organisationnels du projet et les modalités de coordination globale, spécifier notamment :

- *le responsable de chaque tâche et les partenaires impliqués (possibilité de l'indiquer sous forme graphique selon le modèle ci-dessous)*
- *les contributions des partenaires (le « qui fait quoi »)*

Exemple de présentation graphique de l'organisation d'un projet, on spécifiera en particulier :

- *les liens entre les différentes tâches identifiées au §1.4*
- *l'échéancier des différentes tâches identifiées au § 1.4 (cf. modèle ci-dessous)*

Each partner will be leader on a subject. In particular, the responsible of each partner will be in charge in one of the four subjects, see section 1.4 for the constitution of the team working on each subject. However, notice that all four subjects include directly from 2 to 3 partners. We expect each partner will in fact be involved in each task, but at a different level. In the graphic below, we take into account only the major participation. The four subects can evolve on their own schedule, but we expect them to benefit from the interactions.

We plan to have 3 workshops per year and organize at least one international conference on the subject during the period of the project.

The subject on Random maps will be in full regime after the end of the ANR SADA in december 2008, where some of the permanents are strongly implied. This appears in the graphic below.

The deliverables will consist in semestriel reports, the organized worshops, the international conference, publications in international journals and talks in international conferences.

Tâche/Tasks	Partenaires/Partners				Année 1 Year 1		Année 2 Year 2		Année 3 Year 3		Année 4 Year 4	
	1	2	3	4	6	12	18	24	30	36	42	48
1. CRT valued processes (J.-F. Delmas) Progress report/final report												
2. Fragmentation (R. Abraham) Progress report/final report												
3. Random maps (J.-F. Marckert) Progress report/final report												
4. Percolation (P. Chassaing) Progress report/final report												
Rapports d'avancement semestriel Progress report/expenses					☺	☺	☺	☺	☺	☺	☺	☺
Accord de consortium / rapport final Consortium agreement/final report										☆		☆

☺ : Rapport d'avancement semestriel/6 month-progress report

✪: Accord de consortium (obligatoire dans le cas d'un partenariat public/privé, conseillé dans tous les autres cas)/Consortium agreement

☆: Rapport de synthèse et récapitulatif des dépenses/Final report and expenses summary

Préciser de façon synthétique les jalons scientifiques et/ou technologiques, les principaux points de rendez-vous, les points bloquants ou aléas qui risquent de remettre en cause l'aboutissement du projet (cf. exemple ci-dessous)

TABLEAU des LIVRABLES et des JALONS (le cas échéant)/*Deliverables and milestones*			
Tâche Task	Intitulé et nature des livrables et des jalons/ *Title and substance of the deliverables and milestones*	Date de fourniture ***nombre de mois à compter de T0 Delivery date, in months starting from T0***	Partenaire responsable du livrable/jalon *Partner in charge of the deliverable/ milestone*
1.			

	Rapport + Publications	12	1
	Rapport + Publications	24	1
	Rapport + Publications	36	1
	Rapport + Publications	48	1
2.			
	Rapport + Publications	12	2
	Rapport + Publications	24	2
	Rapport + Publications	36	2
	Rapport + Publications	48	2
3.			
	Rapport + Publications	12	3
	Rapport + Publications	24	3
	Rapport + Publications	36	3
	Rapport + Publications	48	3
4.			
	Rapport + Publications	12	4
	Rapport + Publications	24	4
	Rapport + Publications	36	4
	Rapport + Publications	48	4

1.7 Organisation du partenariat/*Consortium organisation*

1.7.1 Pertinence des partenaires/*Consortium relevance*

*Fournir ici les éléments permettant d'apprécier la **qualité des partenaires et les compétences de chacun** dans le projet (le « pourquoi qui fait quoi »). Il peut s'agir de réalisations passées, d'indicateurs (publications, brevets), de l'intérêt du partenaire pour le projet…*

Each partner has an impressive number of high quality publications in the fields related to this project (see the CV and corresponding publications in international journals), as well as international collaborations, see the references in CV and in Section 1.4. Most of the permanents have already supervised PhD students or PostDoc on related fields (see CV, and PhD student enlisted in this project). From the publications, it appears that a collaboration for a significant period should be very fruitfull.

1.7.2 Complémentarité et synergie des partenaires/*Added value of the consortium*

*Montrer la **complémentarité et la valeur ajoutée des coopérations entre les différents partenaires**. L'interdisciplinarité et l'ouverture à diverses collaborations seront à justifier en accord avec les orientations du projet.*

As it has been already noticed, each proposed subject will concern at least 2 or 3 partners. Some collaborations already exists between the partners, this can be seen in the publication list in Section 1.4. Some partners also will bring different points of view, this can be seen from their implication in other ANR projects, such as SADA, MAEV, MARS, MADCOF, ADAP'MC. This will certainly help to developp new applications in the corresponding fields.

1.7.3 Qualification du coordinateur du projet et des partenaires/*Principal investigator and partners : résumé and CV*

Pour chacune des personnes dont l'implication dans le projet est supérieure à ***3mois/an,*** *une biographie* ***d'une page maximum*** *sera placée en annexe du présent document. Celle-ci comportera :*

- *Nom, prénom, âge, genre, cursus, situation actuelle*
- *Autres expériences professionnelles*
- *Liste des cinq publications (ou brevets) les plus significatives des cinq dernières années, nombre total de publications dans les revues internationales et actes de congrès à comité de lecture*
- *Et pour le coordinateur du projet, son expérience antérieure de coordination*

Le cas échéant, indiquer pour chacun des membres, son implication dans d'autres projets nationaux ou internationaux (contrats publics et privés en cours et les demandes en cours) selon le modèle fourni en annexe. Expliciter l'articulation entre les travaux proposés et les travaux antérieurs ou déjà en cours, en particulier ceux soutenus par l'ANR.

Principal investigator: J.-F. Delmas (implication: 60%)
Partner investigator: R. Abraham (implication 70%), P. Chassaing (50%), J.-F. Marckert (50%)

See CV in annex.

1.8 Accès aux grands instruments/Access to large facilities

En cas d'utilisation de grand instrument, donnez les références de la demande d'accès à celui-ci (nature du grand instrument, date et demande d'accès, statut de la demande : prévu, demandé, accepté) et le cas échéant, fournir le(s) avis/accord(s) du comité scientifique correspondant.

None

1.9 Stratégie de valorisation et de protection des résultats/*Data management, data sharing, intellectual property strategy, and exploitation of project results* *(1/2 page maximum)*

Pour les projets partenariaux organismes de recherche/entreprises, les partenaires devront conclure, sous l'égide du coordinateur du projet, un accord de consortium dans un délai d'un an. Indiquer les grandes lignes de la répartition entre partenaires de la propriété intellectuelle, des droits d'exploitation etc.,
Pour les projets académiques, l'accord de consortium n'est pas obligatoire mais fortement conseillé.

FICHES BUDGÉTAIRES - Blanc

Fiche Partenaire 1

Nom Complet du partenaire	Catégorie de partenaire	Base de calcul pour l'assiette de l'aide
ment et de Recherche en Mathématiques et Calcul Scient	Organismes de recherche+Fondation de recherche	Coût marginal

Données financières (montant HT en € incluant la TVA non récupérable)

EQUIPEMENTS (€)	Personnels						Prestations de service externe (€)	Missions (€)	Autres dépenses (€)	Dépenses justifiées sur facturation interne (€)	Totaux (€)
	permanents		non permanents à financer par l'ANR		Autres non permanents						
	personne. mois	Coût (€)	*personne. mois*	Coût (€)	*personne. mois*	Coût (€)					
	122.40	518,020	*60.00*	188,000				65,000	12,000	6,000	789,020
Montant maximum des frais de gestion/ frais de structure (€)				10,840		10840	<--Frais de gestion / frais de structure demandés (€)-->				10,840
Uniquement pour laboratoire d'organisme public de recherche ou fondation financé au coût marginal, indiquer le taux d'environnement								75.0%	Frais d'environnement (€)		529,515
										Coût complet (€)	**1,329,375**
										Coût éligible pour le calcul de l'aide : Assiette (€)	**281,840**
100.00%							Taux d'aide demandée)-->	100.0%	*Aide demandée (€)*		*281,840*

Fiche Partenaire 2

Nom Complet du partenaire	Catégorie de partenaire	Base de calcul pour l'assiette de l'aide
iques et Applications, Physique Mathématique d'Orléans	Organismes de recherche+Fondation de recherche	Coût marginal

Données financières (montant HT en € incluant la TVA non récupérable)

EQUIPEMENTS (€)	Personnels						Prestations de service externe (€)	Missions (€)	Autres dépenses (€)	Dépenses justifiées sur facturation interne (€)	Totaux (€)
	permanents		non permanents à financer par l'ANR		Autres non permanents						
	personne. mois	Coût (€)	*personne. mois*	Coût (€)	*personne. mois*	Coût (€)					
	50.40	136,051	*12.00*	48,000	*19.20*	56,000		23,000	4,000	6,000	273,051
Montant maximum des frais de gestion/ frais de structure (€)				3,240		3240	<--Frais de gestion / frais de structure demandés (€)-->				3,240
Uniquement pour laboratoire d'organisme public de recherche ou fondation financé au coût marginal, indiquer le taux d'environnement								80.0%	Frais d'environnement (€)		192,041
										Coût complet (€)	**468,332**
										Coût éligible pour le calcul de l'aide : Assiette (€)	**84,240**
100.00%							Taux d'aide demandée)-->	100.0%	*Aide demandée (€)*		*84,240*

Fiche Partenaire 3

Nom Complet du partenaire	Catégorie de partenaire	Base de calcul pour l'assiette de l'aide
Laboratoire Bordelais de Recherche en Informatique (Labri	Organismes de recherche+Fondation de recherche	Coût marginal

Données financières (montant HT en € incluant la TVA non récupérable)

EQUIPEMENTS (€)	Personnels						Prestations de service externe (€)	Missions (€)	Autres dépenses (€)	Dépenses justifiées sur facturation interne (€)	Totaux (€)
	permanents		non permanents à financer par l'ANR		Autres non permanents						
	personne. mois	Coût (€)	personne. mois	Coût (€)	personne. mois	Coût (€)					
	81.60	359,166	12.00	48,000	12.00	35,000		35,000	8,000	6,000	491,166
Montant maximum des frais de gestion/ frais de structure (€)				3,880		3880	<--Frais de gestion / frais de structure demandés (€)-->				3,880
Uniquement pour laboratoire d'organisme public de recherche ou fondation financé au coût marginal, indiquer le taux d'environnement								80.0%	Frais d'environnement (€)		353,733
										Coût complet (€)	848,779
										Coût éligible pour le calcul de l'aide : Assiette (€)	100,880
100.00%							Taux d'aide demandée)-->	100.0%	Aide demandée (€)		100,880

Fiche Partenaire 4

Nom Complet du partenaire	Catégorie de partenaire	Base de calcul pour l'assiette de l'aide
Institut de Mathématiques Elie Cartan (IECN)	Organismes de recherche+Fondation de recherche	Coût marginal

Données financières (montant HT en € incluant la TVA non récupérable)

EQUIPEMENTS (€)	Personnels						Prestations de service externe (€)	Missions (€)	Autres dépenses (€)	Dépenses justifiées sur facturation interne (€)	Totaux (€)
	permanents		non permanents à financer par l'ANR		Autres non permanents						
	personne. mois	Coût (€)	personne. mois	Coût (€)	personne. mois	Coût (€)					
	57.60	156,695	12.00	48,000	2.40	7,000		25,000	6,000	6,000	248,695
Montant maximum des frais de gestion/ frais de structure (€)				3,400		3400	<--Frais de gestion / frais de structure demandés (€)-->				3,400
Uniquement pour laboratoire d'organisme public de recherche ou fondation financé au coût marginal, indiquer le taux d'environnement								80.0%	Frais d'environnement (€)		169,356
										Coût complet (€)	421,451
										Coût éligible pour le calcul de l'aide : Assiette (€)	88,400
100.00%							Taux d'aide demandée)-->	100.0%	Aide demandée (€)		88,400

Récapitulatif des données financières

	EQUIPEMENTS (€)	Personnels						Prestations de service externe (€)	Missions (€)	Autres dépenses (€)	Dépenses justifiées sur facturation interne (€)	Totaux (€)
		permanents		non permanents à financer par l'ANR		Autres non permanents						
		personne. mois	Coût (€)	personne. mois	Coût (€)	personne. mois	Coût (€)					
Partenaire1	-	122	518,020	60	188,000	-	-	-	65,000	12,000	6,000	789,020
Partenaire2	-	50	136,051	12	48,000	19	56,000	-	23,000	4,000	6,000	273,051
Partenaire3	-	82	359,166	12	48,000	12	35,000	-	35,000	8,000	6,000	491,166
Partenaire4	-	58	156,695	12	48,000	2	7,000	-	25,000	6,000	6,000	248,695
	-	**312.00**	**1,169,932**	***96.00***	**332,000**	**33.60**	**98,000**	**-**	**148,000**	**30,000**	**24,000**	**1,801,932**
								Frais de gestion / frais de structure demandés (€)-->				21,360
											Frais d'environnement (€)	1,244,645
											Coût complet (€)	3,067,937
											Coût éligible pour le calcul de l'aide : Assiette (€)	555,360
											Aide demandée (€)	555,360

2 Justification scientifique des moyens demandés/*Requested budget : detailed financial plan*

On présentera ici ***la justification scientifique et technique*** *des moyens demandés par chaque partenaire sur le site de soumission et synthétisés à l'échelle du projet dans le tableau récapitulatif ci-dessus.*

Chaque partenaire justifiera les moyens qu'il demande en distinguant les différents postes de dépenses.

2.1 Partenaire 1/*Partner 1*

Principal investigator: J.-F. Delmas (ENPC)
Participants: J. Berestycki (Univ. Paris 6), T. Duquesne (Univ. Paris 6), B. Haas (Univ. Paris Dauphine), J.-F. Le Gall (Univ. Orsay), G. Miermont (Univ. Orsay)

2.1.2 Equipement/*Large equipment*

Préciser la nature des équipements et justifier le choix des équipements*
Si nécessaire, préciser la part de financement demandé sur le projet et si les achats envisagés doivent être complétés par d'autres sources de financement. Indiquer alors le montant, l'origine et le statut complémentaires (« acquis », « demandé », « à demander ») de ces financements.

** Un devis pour tout équipement d'un montant > 4 000euros, sera demandé si le projet est retenu pour financement.*

2.1.3 Personnel/*Manpower*

Le personnel non permanent (doctorants, post-doctorants,..) financé sur le projet devra être justifié.
Fournir les profils des postes à pourvoir pour les personnels à recruter (1/2 page maximum par type de poste à renseigner directement sur le site de soumission). Ne sont pas éligibles au financement les personnels administratifs.
Pour les doctorants, préciser si des demandes d'allocations de thèse sont prévues ou en cours, indiquer la nature et la part de financement imputable au projet.

PhD position: 3 years (35kE each year) + one third of 3 years (12kE each year)

In order to investigate on CRT valued process, we want to offer a PhD position (3 years) starting at the beginning of the ANR. The PhD student will have to get familiar with the mathematical tools of CRT, and then investigate on CRT valued process using the prunning and immigration procedure. The first material will be found in recent work by Abraham and Delmas on prunning and proportionnal immigration. This model is different from the one introduced in [EvWi06]. It might be easier to study this process and in particular prove the convergence of the prunning-immigration process on discrete tree to CRT. The PhD student will need good background in probability theory, with knowledge on random trees. The student will clearly benefit from the activity of the project. This PhD position will be fully supported by the project.

We also ask for a position for a PhD student, working on construction of Lévy trees using stochastic flows. This PhD position will be supported by the project at 33%, since we expect to get a partial support from its mothercountry.

PostDoc position: 1 year

The PostDoc needs to have done his PhD in the area of random trees or random maps. He will be involved in the research on CRT, with in view some applications either in biology or physics. The position will be offered after the first year of the project, so that it will benefit fully from the project and already going on collaborations. The precise subject will be given at that time. The PostDoc position will be fully supported by the project.

2.1.4 Prestation de service externe/*Services, outward facilities*

Pour ces prestations de service dont le montant ne pas être supérieur à 50% de l'aide demandée, préciser :

- *la nature des prestations*
- *le type de prestataire*

2.1.5 Missions/*Travels*

***Si le montant excède 5% de l'aide demandée**, préciser :*

- *les missions liées aux travaux d'acquisition sur le terrain (campagnes de mesures…)*
- *les missions relevant de colloques, congrès, réunions entre partenaires…*

But for the PostDoc or PhD positions, the principal part of the budget will be devoted to travel expenses because the project does not need heavy equipement. Each permanent of the project will have to travel at least twice a year in France for the worshops of the project. Each travel (including one or two nights) is about 250E. As it can be noticed from the references and the subjects of this project, we aim to get results at an international level. It is therefore crucial to allows the permanent and PhD student of the project to travel abroad. In order to increase the influence of the project at an international level, we estimate the permanent of the project will travel participate to conferences abroad at least twice a year once in europe and once outside europe, whereas nonpermanent people will participate to one abroad conference. Each abroad travel is about one week at least and is estimated at 1000E in europe and 2500E outside europe. With 6 permanents (at an average of 46%), 2 PhD students (3 years) and 1 year Postdoc, we get for 4 years an amount of 55kE.

Eventually to organize the international conference of the project, we plan to invite 5 international speakers for plenary talks. This is evaluated at 10kE.

2.1.6 Dépenses justifiées sur une procédure de facturation interne/*Expenses for inward billing*

Préciser la nature des prestations (ex : accès à des plates-formes technologiques, moyens de calcul, bases documentaires,…)

We mainly use articles data base provided by our respective institution and books. To complete our current libraries in the field of this project, we shall buy 20 books per year, for a global amount of 1500E per year. This leads to 6kE for the project.

2.1.7 Autres dépenses de fonctionnement/*Other expenses*

*Toute dépense **significative** relevant de ce poste devra être justifiée.*

We need to buy laptops for non permanent people and, over a period of 4 years, we shall consider to renew the materials for people involved at more than 40%, that is 4 permanents. This gives 6 laptops that is 12kE.

2.2 *Partenaire 2/Partner 2*

Investigator: R. Abraham (Univ. Orléans)
Participants: J.-B. Gouéré (Univ. Orléans), L. Serlet (Univ. Clermont Ferrand), G. Voisin (Univ. Orléans)

2.2 Equipement/*Large equipment*

Préciser la nature des équipements et justifier le choix des équipements*
Si nécessaire, préciser la part de financement demandé sur le projet et si les achats envisagés doivent être complétés par d'autres sources de financement. Indiquer alors le montant, l'origine et le statut complémentaires (« acquis », « demandé », « à demander ») de ces financements.

** Un devis pour tout équipement d'un montant > 4 000euros, sera demandé si le projet est retenu pour financement.*

2.2.2 Personnel/*Manpower*

Le personnel non permanent (doctorants, post-doctorants,..) financé sur le projet devra être justifié.
Fournir les profils des postes à pourvoir pour les personnels à recruter (1/2 page maximum par type de poste à renseigner directement sur le site de soumission). Ne sont pas éligibles au financement les personnels administratifs.
Pour les doctorants, préciser si des demandes d'allocations de thèse sont prévues ou en cours, indiquer la nature et la part de financement imputable au projet.

PostDoc position: 1 year

The PostDoc needs to have done his PhD in the area of random trees or random maps. He will be involved in the research on CRT, with in view some applications either in biology or physics. The position will be offered after the first year of the project, so that it will benefit fully from the project and already going on collaborations. The precise subject will be given at that time. The PostDoc position will be fully supported by the project.

2.2.3 Prestation de service externe/*Services, outward facilities*

Pour ces prestations de service dont le montant ne pas être supérieur à 50% de l'aide demandée, préciser :

- *la nature des prestations*
- *le type de prestataire*

2.2.4 Missions/*Travels*

***Si le montant excède 5% de l'aide demandée**, préciser :*

- *les missions liées aux travaux d'acquisition sur le terrain (campagnes de mesures…)*
- *les missions relevant de colloques, congrès, réunions entre partenaires…*

But for the PostDoc or PhD positions, the principal part of the budget will be devoted to travel expenses because the project does not need heavy equipement. Each permanent of the project will have to travel at least twice a year in France for the worshops of the project. Each travel (including one or two nights) is about 250E. As it can be noticed from the references and the subjects of this project, we aim to get results at an international level. It is therefore crucial to allows the permanent and PhD student of the project to travel abroad. In order to increase the influence of the project at an international level, we estimate the permanent of the project will travel participate to conferences abroad at least twice a year once in europe and once outside europe, whereas nonpermanent people will participate to one abroad conference. Each abroad travel is about one week at least and is estimated at 1000E in europe and 2500E outside europe. With 3 permanents (at an average of 35%), 1 PhD students (3 years) and 1 year Postdoc, we get for 4 years an amount of 23kE.

2.2.5 Dépenses justifiées sur une procédure de facturation interne/*Expenses for inward billing*

Préciser la nature des prestations (ex : accès à des plates-formes technologiques, moyens de calcul, bases documentaires,…)

We mainly use articles data base provided by our respective institution and books. To complete our current libraries in the field of this project, we shall buy 20 books per year, for a global amount of 1500E per year. This leads to 6kE for the project.

2.2.6 Autres dépenses de fonctionnement/*Other expenses*

*Toute dépense **significative** relevant de ce poste devra être justifiée.*

We need to buy laptops for non permanent people and, over a period of 4 years, we shall consider to renew the materials for people involved at more than 40%, that is 1 permanent. This gives 2 laptops that is 4kE.

2.3 *Partenaire 3/Partner 3*

Investigator: J.-F. Marckert (Univ. Bordeaux)
Participants: M. Albenque (Univ. Bordeaux), O. Bernardi (Univ. Orsay), C. Bordenave (Toulouse), M. Bousquet-Mélou (Univ. Bordeaux),

2.3 Equipement/*Large equipment*

Préciser la nature des équipements et justifier le choix des équipements*
Si nécessaire, préciser la part de financement demandé sur le projet et si les achats envisagés doivent être complétés par d'autres sources de financement. Indiquer alors le montant, l'origine et le statut complémentaires (« acquis », « demandé », « à demander ») de ces financements.

** Un devis pour tout équipement d'un montant > 4 000euros, sera demandé si le projet est retenu pour financement.*

2.3.2 Personnel/*Manpower*

Le personnel non permanent (doctorants, post-doctorants,..) financé sur le projet devra être justifié.
Fournir les profils des postes à pourvoir pour les personnels à recruter (1/2 page maximum par type de poste à renseigner directement sur le site de soumission). Ne sont pas éligibles au financement les personnels administratifs.
Pour les doctorants, préciser si des demandes d'allocations de thèse sont prévues ou en cours, indiquer la nature et la part de financement imputable au projet.

PostDoc position: 1 year

The PostDoc needs to have done his PhD in the area of random trees or random maps. He will be involved in the research on random maps, with in view some applications either in physics. The position will be offered after the first year of the project, so that it will benefit fully from the project and already going on collaborations. The precise subject will be given at that time. The PostDoc position will be fully supported by the project.

2.3.3 Prestation de service externe/*Services, outward facilities*

Pour ces prestations de service dont le montant ne pas être supérieur à 50% de l'aide demandée, préciser :

- *la nature des prestations*
- *le type de prestataire*

2.3.4 Missions/*Travels*

***Si le montant excède 5% de l'aide demandée**, préciser :*

- *les missions liées aux travaux d'acquisition sur le terrain (campagnes de mesures…)*
- *les missions relevant de colloques, congrès, réunions entre partenaires…*

But for the PostDoc or PhD positions, the principal part of the budget will be devoted to travel expenses because the project does not need heavy equipement. Each permanent of the project will have to travel at least twice a year in France for the worshops of the project. Each travel (including one or two nights) is about 250E. As it can be noticed from the references and the subjects of this project, we aim to get results at an international level. It is therefore crucial to allows the permanent and PhD student of the project to travel abroad. In order to increase the influence of the project at an international level, we estimate the permanent of the project will travel participate to conferences abroad at least twice a year once in europe and once outside europe, whereas nonpermanent people will participate to one abroad conference. Each abroad travel is about one week at least and is estimated at 1000E in europe and 2500E outside europe. With 3 permanents (at an average of 50%), 1 PhD student (to arrive in 2008), 1 year Postdoc, we get for 4 years an amount of 30kE.

2.3.5 Dépenses justifiées sur une procédure de facturation interne/*Expenses for inward billing*

Préciser la nature des prestations (ex : accès à des plates-formes technologiques, moyens de calcul, bases documentaires,…)

We mainly use articles data base provided by our respective institution and books. To complete our current libraries in the field of this project, we shall buy 20 books per year, for a global amount of 1500E per year. This leads to 6kE for the project.

2.3.6 Autres dépenses de fonctionnement/*Other expenses*

*Toute dépense **significative** relevant de ce poste devra être justifiée.*

We need to buy laptops for PhD students and, over a period of 4 years, we shall consider to renew the materials for people involved at more than 40%, that is 3 permanents. This gives 4 laptops that is 8kE.

2.4 *Partenaire 4/Partner 4*

Investigator: P. Chassaing (Univ. Nancy)
Participants: O. Garet (Univ. Nancy), L. Guérin (Univ. Nancy), M. Krikun (Univ. Nancy), A. Marchand (Univ. Nancy).

2.4 Equipement/*Large equipment*

Préciser la nature des équipements et justifier le choix des équipements*
Si nécessaire, préciser la part de financement demandé sur le projet et si les achats envisagés doivent être complétés par d'autres sources de financement. Indiquer alors le montant, l'origine et le statut complémentaires (« acquis », « demandé », « à demander ») de ces financements.

** Un devis pour tout équipement d'un montant > 4 000euros, sera demandé si le projet est retenu pour financement.*

2.4.2 Personnel/*Manpower*

Le personnel non permanent (doctorants, post-doctorants,..) financé sur le projet devra être justifié.

Fournir les profils des postes à pourvoir pour les personnels à recruter (1/2 page maximum par type de poste à renseigner directement sur le site de soumission). Ne sont pas éligibles au financement les personnels administratifs.
Pour les doctorants, préciser si des demandes d'allocations de thèse sont prévues ou en cours, indiquer la nature et la part de financement imputable au projet.

PostDoc position: 1 year

The PostDoc needs to have done his PhD in the area of random trees or random maps. He will be involved in the research on CRT, with in view some applications either in biology or physics. The position will be offered after the first year of the project, so that it will benefit fully from the project and already going on collaborations. The precise subject will be given at that time. The PostDoc position will be fully supported by the project.

2.4.3 Prestation de service externe/*Services, outward facilities*

Pour ces prestations de service dont le montant ne pas être supérieur à 50% de l'aide demandée, préciser :

- *la nature des prestations*
- *le type de prestataire*

2.4.4 Missions/*Travels*

***Si le montant excède 5% de l'aide demandée**, préciser :*

- *les missions liées aux travaux d'acquisition sur le terrain (campagnes de mesures…)*
- *les missions relevant de colloques, congrès, réunions entre partenaires…*

But for the PostDoc or PhD positions, the principal part of the budget will be devoted to travel expenses because the project does not need heavy equipement. Each permanent of the project will have to travel at least twice a year in France for the worshops of the project. Each travel (including one or two nights) is about 250E. As it can be noticed from the references and the subjects of this project, we aim to get results at an international level. It is therefore crucial to allows the permanent and PhD student of the project to travel abroad. In order to increase the influence of the project at an international level, we estimate the permanent of the project will travel participate to conferences abroad at least twice a year once in europe and once outside europe, whereas nonpermanent people will participate to one abroad conference. Each abroad travel is about one week at least and is estimated at 1000E in europe and 2500E outside europe. With 4 permanents (at an average of 30%), 1 PhD students (3 years) and 1 year Postdoc, we get for 4 years an amount of 25kE.

2.4.5 Dépenses justifiées sur une procédure de facturation interne/*Expenses for inward billing*

Préciser la nature des prestations (ex : accès à des plates-formes technologiques, moyens de calcul, bases documentaires,…)

We mainly use articles data base provided by our respective institution and books. To complete our current libraries in the field of this project, we shall buy 20 books per year, for a global amount of 1500E per year. This leads to 6kE for the project.

2.4.6 Autres dépenses de fonctionnement/*Other expenses*

*Toute dépense **significative** relevant de ce poste devra être justifiée.*

We need to buy laptops for non permanent people and, over a period of 4 years, we shall consider to renew the materials for people involved at more than 40%, that is 2 permanents. This gives 3 laptops that is 6kE.

Annexes

Description des partenaires/*Partners informations* (cf. § 1.7.1) *(1 page maximum par partenaire)*

Partenaire 1 : CERMICS

Civilité *	**Nom** *	**Prénom** *
Mr	DELMAS	Jean-François
Grade *	ICPC	**Employeur** * ENPC
Mail *	**delmas@cermics.enpc.fr**	
Tél *	**01 64 15 37 73**	**Fax 01 64 15 35 86**
Laboratoire *(nom complet)* *		
Centre d'Enseignement et de Recherche en Mathématiques et Calcul Scientifique.		
N° Unité *(s'il existe)*		
Adresse complète du laboratoire *		
Ecole Nationale des Ponts et Chaussées 6 et 8 avenue Blaise Pascal Cité Descartes - Champs sur Marne 77455 Marne la Vallée Cedex 2		
Code postal * **77455**	**Ville** * **Marne la Vallée**	

	Nom	Prénom	Emploi actuel	% de temps de recherche consacré au projet
Coordinateur	Delmas	Jean-François	ICPC ENPC	60%
	Berestycki	Julien	MCF Univ. Pierre et Marie Curie	20 %
	Duquesne	Thomas	Professeur Univ. Pierre et Marie Curie	70%
	Haas	Bénédicte	MCF Univ. Paris-Dauphine	40%
	Le Gall	Jean-François	Professeur Univ. d'Orsay	25%
	Miermont	Grégory	CR CNRS (Orsay)	60%

Partenaire 2 : MAPMO

Civilité *	**Nom** *	**Prénom** *
Mr	ABRAHAM	Romain
Grade *	Professeur	**Employeur** * Univ. Orléans
Mail *	**romain.abraham@univ-orleans.f**	
Tél *	**02 38 49 48 96**	**Fax 02 38 41 72 05**
Laboratoire *(nom complet)* *		
Laboratoire de Mathématiques et Applications, Physique Mathématique d'Orléans.		
N° Unité *(s'il existe)*	6628	
Adresse complète du laboratoire *		
Université d'Orléans, UFR Sciences Bâtiment de mathématiques - Route de Chartres B.P. 6759 - 45067 Orléans cedex 2 FRANCE		
Code postal * **45067**	**Ville** * **Orléans**	

	Nom	Prénom	Emploi actuel	% de temps de recherche consacré au projet
Coordinateur	Abraham	Romain	Professeur Univ. d'Orléans	70%
	Gouéré	Jean-Baptiste	MCF Univ. d'Orléans	25 %
	Serlet	Laurent	Professeur Univ. Blaise Pascal (Clermont Ferrand II)	10%
	Voison	Guillaume	Doctorant	80%

Partenaire 3 : LaBRI

Civilité *	**Nom** *	**Prénom** *
Mr	MARCKERT	Jean-François
Grade *	CR	**Employeur** * CNRS
Mail *	**delmas@cermics.enpc.fr**	
Tél *	**05 40 00 35 22**	**Fax 05 40 00 66 69**
Laboratoire *(nom complet)* *		
Laboratoire Bordelais de Recherche en Informatique		
N° Unité *(s'il existe)*	5800	
Adresse complète du laboratoire *		

LaBRI. Unité Mixte de Recherche CNRS (UMR 5800) 351, cours de la Libération F-33405 Talence cedex

Code postal *	**33405**	**Ville** *	**Talence**

	Nom	Prénom	Emploi actuel	% de temps de recherche consacré au projet
Coordinateur	Marckert	Jean-François	CR CNRS (Bordeaux)	50%
	Albenque	Marie	Doctorant	50 %
	Bernardi	Olivier	CR CNRS (Orsay)	30%
	Bordenave	Charles	CR CNRS (Toulouse)	40%
	Bousquet-Mélou	Mireille	DR CNRS (Bordeaux)	50%

Partenaire 4 : IECN

Civilité *	**Nom** *	**Prénom** *	
Mr	CHASSAING	Philippe	
Grade *	Professeur	**Employeur** *	IUFM Nancy
Mail *	**Philippe.Chassaing@iecn.u-nancy.fr**		
Tél *	**03 83 68 45 59**	**Fax**	**03 83 68 45 04**

Laboratoire *(nom complet)* *
Institut Élie Cartan Université Henri Poincaré

N° Unité *(s'il existe)*	7502

Adresse complète du laboratoire *
Université Henri Poincaré Nancy 1. B.P. 239, F-54506 Vandoeuvre-lès-Nancy Cedex, France.

Code postal *	**54506**	**Ville** *	**Vandoeuvre-lès-Nancy**

	Nom	Prénom	Emploi actuel	% de temps de recherche consacré au projet
Coordinateur	Chassaing	Philippe	Professeur IUFM Nancy	50%
	Garet	Olivier	Professeur Univ. Henri Poincaré	10 %
	Guérin	Lucas	Doctorant	10%
	Krikun	Maxime	MCF Univ. Henri Poincaré	50%
	Marchand	Régine	MCF Univ. Henri Poincaré	10%

Biographies/*Résumés and CV* (cf. § 1.7.3) *(1 page maximum par personne)*

Partenaire 1 : CERMICS

DELMAS Jean-François,
ENPC-CERMICS, 6 & 8, av. Blaise Pascal, Cité Descartes - Champs sur Marne,
77455 Marne-La-Vallée, CEDEX 2, France.
Phone number: (33) 1 64 15 37 73.
e-mail: delmas@cermics.enpc.fr}
Home page: http://cermics.enpc.fr/~delmas/home.html

Personal information

Birth date 11/19/1968.
Address: 50, avenue du Clos Prieur, 77150 Férolles-Attilly, France.
Phone number: (33) 1 60 02 16 39.

Employment

Since 2007, in charge of goup MAS (Modélisation Aléatoire et Statistique) from SMAI (Société de Mathématiques Aplliquées et Industrielles).
Since 2006, vice director of the departement CERMICS.
Since October 1998: Research position at CERMICS, Ecole Nationale des Ponts et Chaussées.
2006: Invited Professor (April-June), Univ. of California, San-Diego (USA).
2005: Invited Researcher (October-December), Univ. British Columbia (Canada).
2003: ``Habilitation à diriger des recherches'' defended at Universit\'e de Paris VI, on March 2003.
1997-1998: Postdoc position at M.S.R.I. (Mathematical Sciences Research Institute),
Berkeley (California).
1994-1997: PhD thesis: supervisor Jean-François Le Gall (Paris VI).
1991-1994: Ecole Nationale des Ponts et Chaussées.
1988-1991: Ecole Polytechnique.

Papers:

- *Asymptotic results on the length of coalescent trees* (with J.S. Dhersin et A. Siri-Jegousse). To appear in Ann. of App. Probab..
- *Williams' decomposition of the Lévy continuous random tree and simultaneous extinction probability for populations with neutral mutations* (with R. Abraham). To appear in Stoch. Proc. and Appl.
- *Height process for super-critical continuous state branching process*. To appear in Markov Proc. and Rel. Fields.
- *Changing the branching mechanism of a continuous state branching process using immigration* (with R. Abraham). To appear in Annales de l'IHP.
- [*Fragmentation at height associated to Lévy processes*, Stoch. Proc. Appl., Vol. 117, Issue 3, pp 297-311, 2007.

Publications : 18 papers in international journals, 1 published book,
1 paper in revision, 1 submitted paper.
PhD supervision : 1 PhD defended in 2006, currently supervising 2PhD.

Thomas Duquesne

Date of birth: April 30, 1974 in Valenciennes, France.

Professional address: Laboratoire de Probabilités et Modèles Aléatoires

Université Paris 6, 16 rue Clisson, 75013 PARIS, FRANCE

Positions

Since September 2007: Associate professor at the University Paris VI.

Sept.2002 to Sept. 2007: Assistant professor at the University Paris-Sud (Orsay).

Jan. 2005-July 2005 Sabbatical in financed by the CNRS and UC Berkeley. Invited by D.Aldous and J.Pitman in Berkeley UC

Sept. 2003-2007 Prime d'encadrement doctoral et de recherche.

1999-2002 Teaching assistant in the Ecole Normale Superieure de Cachan.

1994-1998 Student in the Ecole Normale Superieure of Paris.

Diploms and prizes

09 Nov. 2006 Habilitation Paris XI, Title: ``Levy trees and superprocesses".

0ct. 2001 PhD Paris VI, under the supervision of J-F. Le Gall.

1997 Agregation de mathematiques.

Prize : 2004: prize of the "Institut de Recherche Mathematique Avancee of Strasbourg" in the memoriam P.-A. Meyer.

Five selected papers

- T.~Duquesne and J-F. Le~Gall. Random Trees, Lévy Processes and Spatial Branching Processes.

Astérisque no 281, 2002.

- T.~Duquesne and J-F. Le~Gall. Probabilistic and fractal aspects of Lévy trees. Probab. Theory and Rel. Fields, 131(4):553--603, 2005.

- T.~Duquesne. A limit theorem for the contour process of conditioned Galton-Watson trees.

Ann. Probab., 31(2):996--1027, 2003.

- T.~Duquesne. Continuum tree limit for the range of random walks on regular trees.

Ann. Probab., 33(6):2212--2254, 2005.

– T.~Duquesne and M.~Winkel. Growth of Lévy trees. Probab. Theory and Rel. Fields, 139(3-4): 313--371, 2007.

–

HAAS Bénédicte

born July 22th , 1976

Assistant professor at Paris-Dauphine University

Professional Experience

09/05 - ... : Assistant professor at CEREMADE, Paris-Dauphine University

- 10/04 - 09/05 : Post-doc at Oxford University, United-Kingdom

- 09/01 - 10/04 : PhD in Probability, Paris 6 University, under the supervision of Jean Bertoin.

Research

- B. Haas, G. Miermont, J. Pitman et M. Winkel, Continuum tree asymptotics of discrete fragmentations and applications to phylogenetic models. To appear in the Annals of Probability.

- B. Haas. Fragmentation processes with an initial mass converging to infinity. J. Theoretical Probab. 20 (4) (2007) p. 721-758

- B. Haas. Equilibrium for fragmentation with immigration. Ann. Appl. Probab. 15 (3) (2005) p1958-1996.

- B. Haas, G. Miermont. The genealogy of self-similar fragmentations with negative index as a continuum random tree. Elect. J. Probab. 9 (2004), p.57-97

- B. Haas. Regularity of formation of dust in self-similar fragmentations. Ann. Inst. Henri Poincaré Probab. Stat. 40 (4) (2004), p.411-438

Other scientific activities

- 01/08 - ... : jury member of the ``agrégation externe de mathématiques''

-10/06 - ... : member of the recruiting committee of the CEREMADE

- 09/06 - ... : co-organizer of the seminar of Analysis and Probability of the CEREMADE

- 02/06 -... : member of the CEREMADE laboratory council

Referee for the journals Annals of Probability, Electronic Journal of Probability, Comm. Math. Science, as well as the AMS Mathematical Reviews.

CURRICULUM VITAE (Jean-François Le Gall)

Professional address : Département de mathématiques, Université Paris-Sud, Centre d'Orsay,

91405 ORSAY Cedex

Phone : 01 69 15 66 57

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EDUCATION

1982 Thèse de troisième cycle, Université Paris VI (Advisor: Marc YOR)

1987 Thèse de Doctorat d'Etat ès Sciences Mathématiques, Université Paris VI.

EMPLOYMENT

1988-2006 : Professor at Université Pierre et Marie Curie (Paris VI)

Since 2006 : Professor at Université Paris-Sud (Paris XI - Orsay).

Since 2007 : Senior member of the Institut universitaire de France.

AWARDS

1997 Loève Prize in probability theory.

2005 Grand Prix Sophie Germain de l'Académie des Sciences.

2005 Prix Fermat de Recherche en Mathématiques.

SELECTED INVITATIONS

Invited speaker at the International Congress of Mathematicians, Berlin 1998

Special Invited Lecture at the European Meeting of Statisticians, Prague 2002

IMS Medallion Lecture at the Santa Barbara Conference on Stochastic Processes and Applications 2005

Plenary lecture at the European Congress of Mathematics, Amsterdam 2008

EDITORIAL ACTIVITIES

Editor-in-Chief of Probability Theory and Related Fields since 2005 (with Jean Bertoin).

Editor-in-Chief of the Annales de l'Institut Henri Poincaré, Probabilités et Statistiques from 1994 to 2000.

FIVE RECENT PUBLICATIONS

1. Probabilistic and fractal aspects of Lévy trees. Probab. Th. Rel. Fields 131, 553-603 (2005) (avec T. Duquesne)

2. Conditioned Brownian trees. Annales Inst. H. Poincaré Probab. Stat. 42, 455-489 (2006) (with M. Weill)

3. A conditional limit theorem for tree-indexed random walk. Stochastic Process. Appl.

116, 539-567 (2006)

4. Stochastic flows associated to coalescent processes III: Infinite population limits. Illinois J. Math. 50, 147-181 (2006) (with J. Bertoin)

5. The topological structure of scaling limits of large planar maps. Invent. Math. 169, 621-670 (2007)

Number of publications: 95

Grégory Miermont

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http://mahery.math.u-psud.fr/~miermont

• Né le 16/07/1979

• Cursus :

1998–2002 : élève de l'Ecole Normale Supérieure

2002–2004 : ATER (Ecole Normale Supérieure).

Thèse de l'Université Pierre et Marie Curie : under the supervision of Jean Bertoin. Defended the16th december of 2003

• Situation professionnelle : Chargé de recherche 2ème classe CNRS au laboratoire de Mathématique, Université de Paris-Sud, depuis octobre 2004.

• Distinction : Cours de la Fondation des Sciences Mathématiques de Paris 2007.

• Activité éditoriale : membre du comité de rédaction des Cours Spécialisés de la SMF

• Sélection de publications (sur 14 publiées ou à paraître) :

[1] G. Miermont, Self-similar fragmentations derived from the stable tree I :

splitting at heights. Probab. Theory Relat. Fields 127, n. 3, 423–454 (2003).

[2] G. Miermont, Self-similar fragmentations derived from the stable tree II :

splitting at nodes. Probab. Theory Relat. Fields 131, n. 3, 341–375 (2005).

[3] J.-F. Marckert, G. Miermont, Invariance principles for random bipartite

planar maps, Ann. Probab. 35, 1642–1705 (2007).

[4] G. Miermont, Invariance principles for spatial multitype Galton-Watson

trees. To appear at the Ann. Inst. H. Poincaré (B) (2008).

[5] B. Haas, G. Miermont, J. Pitman, M. Winkel, Continuum tree asymp-

totics of discrete fragmentations and applications to phylogenetic models. To appear at the Ann. Probab. (2008).

Partenaire 2: MAPMO

Romain Abraham
Né le 22 Avril 1968 à Saint-Dizier (Haute Marne)
Marié deux enfants.

Situation professionnelle : Professeur à l'université d'Orléans depuis Septembre 2004.

Cursus antérieur
Scolarité à l'ENS de Paris 1987-1992
Thèse de doctorat à l'université Pierre et Marie Curie sous la direction de J.F. Le Gall, soutenue en Novembre 1993.
1993-94 Service National actif en tant que scientifique du contingent au CEA. Travail en « Traitement d'images ».
1994-2004 Maître de Conférences à l'université René Descartes.
HDR de l'université René Descartes, soutenue en Mai 2003.

5 dernières publications significatives

R. Abraham, J.F. Delmas. Fragmentation associated with Lévy processes using snake.
Probab. Th. rel. Fields 141, 113-154, 2008.

R. Abraham, J.S. Dhersin, B. Ycart. Strong convergence for urn models with reducible replacement.
Journal Applied Probab. 44, 652-660, 2007.

I. Abraham, R. Abraham, A. Desolneux, S. Li-Tiao-Te. Significant edges in the case of a non-stationnary Gaussian noise.
Pattern Recognition 40, 3277-3291, 2007.

R. Abraham, J.F. Delmas. Asymptotics for the small fragments of the fragmentation at nodes.
Bernoulli 28, 2007.

R. Abraham, J.F. Delmas. Feller property and infinitesimal generator of the exploration process.
J. of Th. Probab. 20, 355-370, 2007.

Publications : 18 publications internationales dans des revues à comité de lecture
1 article en cours de révision, 1 article soumis.

Encadrement doctoral : 1 thèse soutenue en 2005, 2 thèses en cours à Orléans.

Jean-Baptiste Gouéré
46 rue de la gare, 45000 Orléans
Né le 31 décembre 1977

Position actuelle :
- Maitre de conférence à l'université d'Orléans
- Membre du MAPMO (UMR 6628)

Positions successives :
- Depuis septembre 2005 : Maitre de conférence à l'université d'Orléans
- De septembre 2001 à août 2005 : Allocataire moniteur à l'université de Lyon 1
- De septembre 1998 à août 2001 : Elève de l'ENS Lyon

Cursus universitaire :
- De septembre 2001 à décembre 2004 : thèse au LaPCS (Laboratoire de probabilité, combinatoire et statistiques - Lyon 1) sous la direction d'André Goldman. Mention très honorable avec les félicitations du jury.
- 2001. Agrégation de mathématiques (rang : 7).
- 1998. Admission à l'ENS de Lyon.

5 dernieres publications significatives :
- Continuous first-passage percolation and continuous greedy paths model: linear growth. En collaboration avec Régine Marchand. A paraître dans Annals of Applied Probability.
- Existence of subcritical regimes in the Poisson Boolean model of continuum percolation. A paraître dans Annals of Probability.
- Shape of territories in some competing growth models. Annals of Applied Probability, 17(4): 1273-1305, 2007.
- Solvable models of neighbor-dependent nucleotide substitution processes. En collaboration avec Jean Bérard et Didier Piau. Mathematical Bioscience, 211(1):p.56-88, 2008
- Quasicrystals and almost periodicity. Communications in Mathematical Physics, 255(3):655-681, 2005.

Nombre total de publications :
- 1 prépublication soumise
- 5 articles publiés ou à paraître.
- 2 notes publiées à l'Académie des Sciences.

VOISIN Guillaume
32, boulevard Alexandre Martin
45000
tel : 06.14.15.79.20
e-mail : guillaume.voisin@univ-orleans.fr

né le 9 janvier 1983
à Tours
célibataire
Permis B

Curriculum Vitae

Situation actuelle

Doctorant en Mathématiques – Allocataire moniteur
Equipe : Probabilités Statistiques et Modélisation
Laboratoire : MAPMO à l'université d'Orléans

Sujet de recherche : Fragmentation aléatoire associée aux serpents de Lévy.
Directeur de thèse : Mr Romain ABRAHAM

Formation

2005/2006	**Master 2 recherche** Analyse mathématique et Applications Université François Rabelais (Indre et Loire) et Université d'Orléans (Loiret)
2005	**Agrégation de Mathématiques** classé 349ème Université François Rabelais (Indre et Loire)
2003/2004	**Maîtrise de Mathématiques** Université François Rabelais (Indre et Loire)
2001/2003	**D.E.U.G. 2 MIAS – Licence de Mathématiques** Université du Maine (Sarthe)
2000/2001	**classe préparatoire MPSI** Lycée Montesquieu (Sarthe)
2000	**Baccalauréat S** (Option mathématiques). Lycée Notre Dame La Flèche (Sarthe)

Enseignements

2006/2008	TD de probabilités en L2 Mathématiques 1er semestre.
2006/2007	Cours-TD de statistiques en L2 Administration-Gestion 2ème semestre.

Stages

2004	**Mémoire de Maîtrise** à l'université François Rabelais sous la direction de Mr L.Gallardo : Un théorème central limite sur les quantiles d'un n-échantillon.
2006	**Mémoire de Master 2** à l'université François Rabelais sous la direction de Mr **J.Depauw : une propriété markovienne du mouvement Brownien à indice multidimentionnel.**

Partenaire 3: LaBRI

Jean-François Marckert

www.labri.fr/~marckert

Chargé de recherche CR1 CNRS, from sep. 2005, at the LaBRI (Laboratoire Bordelais de recherche en Informatique), université Bordeaux 1, in the research group devoted to combinatorics and analysis of algorithms.
During the years 2000-2005 I was assistant professor (“maître de conférences”) in the mathematics laboratory in the Université de Versailles St-Quentin en Yvelines.

Cursus

- Habilitation à diriger les recherches in mathematics, speciality proabbility theory, in 2004.
- PhD in Applied mathematics (Probability theory) from Université Nancy 1 in 1999.
Co-Phd Director of Marie Albenque, with Jean-Mairesse (Paris 7).

My main research concerns the tight border between large random combinatorial structures and their continuous counterparts. In particular a large part of his research concerns the study of the convergence, in some sense, of rescaled discrete objects (as random walk, random trees, random maps, ...) to continuous objects (as Brownian processes, continuum random tree, Brownian maps,...).

I wrote 20 papers published in international journals.

Some publications:

Directed Animals and Gas Models Revisited
With Y. Le Borgne The Electronic Journal of Combinatorics , R71, (2007).

The lineage process in Galton-Watson trees and globally centered discrete snakes
Annals of Applied Probability, Vol. 18, No. 1, 209-244, (2007)

Invariance principles for random bipartite planar maps
With G. Miermont The Annals of probability, (2007), Vol. 35, No.5, p. 1642-1705

Limit of Normalized Quadrangulations: the Brownian map
With A. Mokkadem, The Annals of probability, Vol. 34, No.6, p. 2144-2202, (2006)

The depth first processes of Galton-Watson trees converge to the same Brownian excursion
With A. Mokkadem. The Annals of probability, Vol. 31, No. 3 - July, p. 1655-1678 (2003).

Olivier Bernardi

Date of birth: June 20th 1979

Département de Mathématiques, Faculté des Sciences d'Orsay, Univ. Paris Sud

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http://www.math.u-psud.fr/∼bernardi/

Current position: CNRS researcher at the mathematics department of Université Paris-Sud, Orsay

Education

2003 – 2006 Ph.D. thesis in combinatorics at Laboratoire Bordelais de Recherche en Informatique (LaBRI), Bordeaux. Combinatorics of maps and Tutte polynomial, supervised by Mireille Bousquet-Mélou.

2002-2003 Master in computer science at Université Paris VI. Highest Honors (mention Très Bien).

2000 - 2003 Student (full fellowship) at Ecole Normale Sup´rieure de Paris (ENS Ulm).

Research experience and invited stays

March - Apr. 2008 Visiting Fellow at the Isaac Newton Institute, Cambridge. Combinatorics and statistical mechanics.

Aug. - Sept. 2007 Junior Research Fellow at Erwin Schrödinger International Institute, Vienna, Discrete models in statistical physics.

Sept. 06 - July 07 Postdoctoral researcher at the Center of Mathematical Research (CRM), Barcelona.

Articles in Journals:

- Bijective counting of tree-rooted maps and shuffles of parenthesis systems, Olivier Bernardi.

  Electronic Journal of Combinatorics, Vol. 14(1) (36 pages).

- A characterization of the Tutte polynomial via combinatorial embedding, Olivier Bernardi.

  To appear in Annals of Combinatorics, special issue on the Tutte polynomial (13 pages). ArXiv: math.CO/0608057.

- Bijective counting of Kreweras walks and loopless triangulations, Olivier Bernardi.

  To appear in Journal of Combinatorial Theory, Series A (27 pages). ArXiv: math.CO/0605320.

- On triangulations with high vertex degree, Olivier Bernardi.

  To appear in Annals of Combinatorics (20 pages). ArXiv: math.CO/0601678.

Curriculum vitae of Mireille Bousquet-Mélou

Mireille Bousquet-Mélou, born 12/05/1967

Education

- « Habilitation à diriger des recherches », University Bordeaux 1, 1996
- PhD in Mathematics and Computer Science, University Bordeaux 1, 1991
- MSC in Mathematics (DEA ``Statistiques et Modélisation Stochastique'') University Paris 11, 1988
- Student at the Ecole normale supérieure (Ulm), 1986—1990

Appointments

- 2002—2008: Directrice de recherche at CNRS, LaBRI (Laboratoire Bordelais de Recherche en Informatique), University Bordeaux 1
- 1990—2002: Chargée de recherche at CNRS, LaBRI

Recent long visits abroad

- March -- April 2007: Centre de Recerca Matematica, Barcelone. Program E*numerative Combinatorics and Random Structures.*
- March -- May2005: Mittag-Leffler Institute, Stockholm, Sweden. Program *Algebraic Combinatorics*.
- June -- July 2002: visiting the statistical mechanics group at the University of Melbourne, Australia

Honors and Distinctions

- Invited speaker at ICM 2006
- Doctor *honoris causa,* University of Linköping, Sweden, 2005
- Bronze medal of CNRS (Centre National de la Recherche Scientifique) 1993
- IBM-France prize for young researcher, 1993

Supervision of PhD theses

- Andrew Rechnitzer (now assistant professor at the University of British Columbia, Canada)
- Yvan Le Borgne (now CNRS at LaBRI)
- Olivier Bernardi (now CNRS in the math department, Orsay University)

Some recent publications related to the project

- (with Svante Janson) The density of the ISE and local limit laws for embedded trees, math.PR/0509322. *Ann. Appl. Proba.* **16** no. 3 (2006) 1597—1632.
- Limit laws for embedded trees. Applications to the integrated superbrownian excursion, math.CO/0501266. *Random Structures Algorithms*. **29**, no. 4 (2006) 475—523.
- Walks in the quarter plane: Kreweras' algebraic model, *Ann. Appl. Proba.* **15** no. 2 (2005) 1451--1491.
- (with Arnaud Jehanne) Polynomial equations with one catalytic variable, algebraic series and map enumeration, math.CO/0504018. *J. Combin. Theory Ser. B.* **96** (2006) 623—672.
- (with Gilles Schaeffer) The degree distribution in bipartite planar maps: applications to the Ising model, Proceedings of the conference *Formal power series and algebraic combinatorics* 03, Sweden, 2003, pp. 312-323. ArXiv math.CO/0211070.

BORDENAVE Charles

Né le 13.07.1977

Chargé de Recherche au C.N.R.S.

Institut de Mathématiques de Toulouse (UMR 5219)
31062 Toulouse cedex 9
charles.bordenave@math.univ-toulouse.fr
http://math.univ-toulouse.fr/~bordenave/

Post-doctorat à UC Berkeley (2006-2007)

Scientific Interest
Spectrum of random graphs and quantum percolation
Combinatorial optimization,
Spanning trees on point processes,
Performance of spatial networks.

Selected Papers
1) F. Baccelli and C. Bordenave.
The radial spanning tree of a Poisson point process
Annals of Applied Probability, 17(1):305--359, 2007.
2) D. Aldous, C. Bordenave and M. Lelarge.
Near-minimal spanning trees: a scaling exponent in probability models.
To appear in Annales de l'Institut Henri Poincaré.
3) C. Bordenave.
Navigation on a Poisson point process.
To appear in Annals of Applied Probability.
4) C. Bordenave.
Eigenvalues of Euclidean Random Matrices.
To appear in Random Structures and Algorithms.
5) C. Bordenave and M. Lelarge
Resolvent of Large Random Graphs (2008).
Prépublication ArXiv:0801.0155

Nombre total de publications : 11

Partenaire 4: IECN

Chassaing Philippe

51 years, male

1976-84 : Student in Ecole Normale de Saint Cloud and Université Paul Sabatier of Toulouse,
1984-2008 : assistant professor and now professor at Université Henri Poincaré, Nancy.

Principal investigator of the ACI NIM ACPA, 2003-2006, member (25%) of the projet blanc SADA, Structures aléatoires discrètes et algorithmes (2005-2008) Principal investigator Mireille Bousquet-Mélou. The main themes of these projects are probabilistic analysis of algorithms, combinatorics and analysis of large combinatorial structures, in connection with limit structures such as the continuum random tree and the Brownian map.

Recent publications and preprints:
1. Local limit of labelled trees and expected volume growth in a random quadrangulation (with B. DURHUUS), The Annals of Probability, Vol. 34, No. 3 - May 2006
2. The center of mass of the ISE and the Wiener index of trees (avec S. Janson), Electron. Comm. Probab., 9 (2004).
3. Sorting with Unreliable Comparisons: A Probabilistic Analysis for Quicksort (avec L. Alonso, F. Gillet, S. Janson, E.M. Reingold, et R. Schott). Combinatorics, Probability and Computing, 13 (2004), n°4-5, 419-449.
4. Random Planar Lattices and Integrated SuperBrownian Excursion (avec G. Schaeffer), Probability Theory and Related Fields, 128(2), Feb 2004, pp. 161-212
5. A Stochastically Quasi-Optimal Algorithm (avec J.F. Marckert et M. Yor), Annals of Applied Probability 13(4), November 2003.
Total publications : 29

Maxim Krikun,
28 years, male
Ph.D. 2004 (Moscow State University, Russia)
Actual situation: Maitre de conference, Universite Nancy 1, France

Professional experience:
2004-2005: Postdoctoral researcher, University of California, Berkeley
2005-2006: CNRS postdoc, Universite Nancy 1, France

Recent publications and preprints:
[1] Local structure of random quadrangulations (preprint) arXiv:math.PR/0512304
[2] Explicit enumeration of triangulations with multiple boundaries. Electronic Journal of Combinatorics, 2007, v. 14, R61
[3] (with D. Aldous) Percolating Paths through Random Points. ALEA 1 (2006) 89-109
[4] Conntected allocation to Poisson process in R^2. Electronic Communications in Probability 12 (2007), 140--145

Total publications (since 2000): 10

Research interests:
Random planar maps; combinatorics of maps. Spatial stochastic models.
Current research projects: random triangulations under Riemannian uniformization; percolation in random maps.

Implication des personnes dans d'autres contrats/*Partner's involvement in other projects*

(cf. § 1.7.3) *(un tableau par partenaire)*

Partenaire 1 : CERMICS

Partenaire Partner	Nom de la personne participant au projet Name of the person involved in the project	Personne. Mois Man.month	Intitulé de l'appel à projets Source de financement Montant attribué Name call for proposals Other fundings from different organisms Allocated budgets	Titre du projet Proposal title	Nom* du coordinateur Name Principal Inverstigator	Date début - Date fin Start- End of the project
N°1	Berestycki	21	ANR Blanc, ANR, 47.5kE	MAEV	Pardoux	2006-2009
N°1	Delmas	7	ANR Blanc, ANR, 47.5kE	MAEV	Pardoux	2006-2009
N°1	Delmas	7	ANR Blanc, ANR, 63.1kE	ADAP'MC	Moulines	2006-2008

Partenaire 3 : LaBRI

Partenaire Partner	Nom de la personne participant au projet Name of the person involved in the project	Personne. Mois Man.month	Intitulé de l'appel à projets Source de financement Montant attribué Name call for proposals Other fundings from different organisms Allocated budgets	Titre du projet Proposal title	Nom* du coordinateur Name Principal Inverstigator	Date début - Date fin Start- End of the project
N°3	Bernardi	21	ANR Blanc, ANR, 36.7kE	SADA	Bousquet-Mélou	2005-2008
N°3	Bousquet-Mélou	21	ANR Blanc, ANR, 36.7kE	SADA	Bousquet-Mélou	2005-2008
N°3	Marckert	18	ANR Blanc, ANR, 84kE	SADA	Bousquet-Mélou	2005-2008
N°3	Marckert	7	ANR Blanc, ANR, 79kE	MARS	Viennot	2007-2009

Partenaire 4: IECN

Partenaire Partner	Nom de la personne participant au projet Name of the person involved in the project	Personne. Mois Man.month	Intitulé de l'appel à projets Source de financement Montant attribué Name call for proposals Other fundings from different organisms	Titre du projet Proposal title	Nom* du coordinateur Name Principal Inverstigator	Date début - Date fin Start- End of the project

			Allocated budgets			
N°3	Chassaing	9	ANR Blanc, ANR, 84kE	SADA	Bousquet-Mélou	2005-2008

Demandes de contrats en cours d'évaluation[1]/Other proposals under evaluation

Partenaire 1 : CERMICS

Partenaire Partner	Nom de la personne participant au projet Name of the person involved in the project	Personne. Mois Man.month	Intitulé de l'appel à projets Source de financement Montant deùmandé Name call for proposals Other fundings from different organisms Expected budgets	Titre du projet Proposal title	Nom* du coordinateur Name Principal Inverstigator
N°1	Berestycki	21	ANR Blanc, ANR, 160kE	MADCOF	Fournier
N°1	Haas	14	ANR Blanc, ANR, 160kE	MADCOF	Fournier
N°1	Miermont	10	ANR Blanc, ANR, 160kE	MADCOF	Fournier
N°1	Delmas	4	ANR Blanc, ANR, 72kE	ADAP'MC	Moulines

Partenaire Partner	Nom de la personne participant au projet Name of the person involved in the project	Personne. Mois Man.month	Intitulé de l'appel à projets Source de financement Montant demandé Name call for proposals Other fundings from different organisms Expected grants	Titre du projet Proposal title	Nom* du coordinateur Name Principal Inverstigator
N°2	Abraham	14	ANR Blanc, ANR, 225kE	TAMIX	Bergounioux

[1] *Mentionner ici les projets en cours d'évaluation soit au sein de programmes de l'ANR, soit auprès d'organismes, de fondations, à l'Union Européenne, etc. que ce soit comme coordinateur ou comme partenaire. Pour chacun, donner le nom de l'appel à projets, le titre du projet et le nom du coordinateur.*