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ACM Sigmetrics Rising Star Award Committee

Lausanne, April 30, 2010

Re: Olivier Dousse

I am happy to propose and endorse Olivier Dousse's application to the ACM Sigmetrics Rising Star Research Award. I know Olivier since 1998, when he followed a class with me during his undergraduate studies, for which he got the best grade. He joined our graduate programme in 2000 and started his PhD with me, which he completed in 2005. He then joined the Deutsche Telekom Laboratories in Berlin from 2006 until 2008, and is now a Principal Member of Research Staff with Nokia Research Center, Switzerland.

Olivier Dousse was a top student, both in his undergraduate classes in Physics and in the graduate school in Communication Systems (He was the best graduate student of our pre-doc program). He did his PhD work on the scalability and performance of large scale multi hops wireless and sensor networks, and make essential contributions on asymptotic properties of wireless networks, with a very original percolation approach (See nomination letter), and which earned him the Honorable Mention for the 2005 ACM Doctoral Dissertation Contest, for the first and so far only time in Europe. His thesis committee, presided by Prof. Emre Telatar (EPFL), was composed of Prof. François Baccelli (INRIA-ENS, Paris, France), Prof. P. R. Kumar (Univ. Illinois Urbana-Champaign), and Prof. Martin Vetterli (EPFL and Univ. California, Berkeley).

From 2006 until 2008, Olivier is a Senior Researcher at Deutsche Telekom Laboratories in Berlin, where he was involved in projects on wireless networks. He showed how a wireless multihop network using MAC protocols with incremental changes compared to the popular 802.11 protocol, and without buffering, can be stabilized in a optimal regime where the link utilization is optimal. Again, he used a very clever analogy with statistical physics, via a dual particle/hole system, that can handle very elegantly interferences and bi-directional traffic in a mesh network.

In 2008, Nokia opened a new research lab in Lausanne, and Olivier was their first new hire. He has been actively contributing to the definition of their research. He is now coordinating the theoretical research effort of the lab, which involves three internal collaborators and provides funding for three EPFL PhD students. The effort focuses on the modeling of social interaction and mobility of users and related privacy issues. Olivier is also very active at linking these concepts to concrete application scenarios by contributing to more applied projects within Nokia Research and has already been co-authoring several invention reports.

Olivier Dousse is a truly outstanding researcher. He excels at picking challenging problems with impact, at modeling a system at the right level of abstraction, and at using tools from other disciplines such as statistical physics to get the proper insight in a complex problem. He combines an acute intuition of the engineering aspects of the problem, and uses great rigour in all mathematical developments.

His creativity is also present in more practical matters, such as the simulations on critical phenomena in the connectivity of ad hoc networks, which require a great care in the programming and a clever use of a cluster of computers to have the necessary CPU power. It was quite unique indeed to see the same PhD student covering, in addition to the research for his thesis, the entire spectrum of activities ranging from the teaching of seminars at the graduate level on measure theory to the support of our Macintosh/Linux computer infrastructure.

Percolation is increasingly applied in the context of self-organized networks, in particular ad hoc and sensor networks, in large part due to Olivier's research contributions during the recent years. I expect therefore to see more researchers interested in the methodology of this thesis, to study not only connectivity, but also many other issues in self-organized networks. Olivier's research has been instrumental in putting EPFL research on

fundamental properties of wireless multihop networks on the map, attracting postdoc and PhD candidates from Europe and US to spend some time at EPFL to learn techniques he has developed. Olivier Dousse can work with first class mathematicians, but also with system persons, as he enjoys developing prototypes and playing with testbeds.

He does provide generous service to our research community, not only by being on the TPC committee of various conferences and workshops, but also by providing countless anonymous reviews for journals of the field. It is usually quite difficult to review papers at the intersection between network theory, information theory, random graphs and stochastic geometry, and there are very few experts in the area who have the needed expertise to review the numerous submissions in this area. More recently, he has acted as a guest co-editor for the recent issue of the IEEE Journal on Selected Areas in Communication devoted to Stochastic Geometry and Random Graphs for Wireless Networks, which received a large number of very good submissions, with a tutorial paper that he co-authored with the other guest editors, which is already highly regarded.

Olivier was also very active as a teaching assistant, with students flocking to the discussion sessions he animates. He enjoys working with students. His good teaching performance lead him to take more responsibilities as a lecturer for the main lectures of stochastic models for communication. His didactic skills are excellent, and he conveys very clearly his ideas and intuitions.

Olivier progressively became a key player in our National Center of Competence and Research on Mobile Information and Communication Systems (NCCR-MICS). The management committee of the Center regularly asks him to give talks, in particular in front of the audit committee of the center: this shows how highly valued his presentations are.

Finally, I should add that Olivier is also a very nice person to work with, very friendly and trustworthy. He is unable to oversell a result or a project, and has a rather quiet personality at first sight, but he really showed leadership both locally in the lab and at large in the research community.

In conclusion, I consider Olivier Dousse as one of the most talented researchers of his generation, with a very high potential. Needless to say, I fully support his application for a Sigmetrics Rising Star Research Award.

Feel free to contact me, should you need additional information.

Sincerely yours,

(Biography: Patrick Thiran is an associate professor at EPFL. He received the electrical engineering degree from the Université Catholique de Louvain, Louvain-la-Neuve, Belgium, in 1989, the M.S. degree in electrical engineering from the University of California at Berkeley, USA, in 1990, and the PhD degree from EPFL, in 1996. He became an adjunct professor in 1998, an assistant professor in 2002 and an associate professor in 2006. From 2000 to 2001, he was with Sprint Advanced Technology Labs, Burlingame, CA. His research interests include communication networks, performance analysis, dynamical systems and stochastic models. He is currently active in the analysis and design of wireless multi-hop networks and in network monitoring. He served as an associate editor for the IEEE Transactions on Circuits and Systems in 1997-99, and he is currently an associate editor for the IEEE/ACM Transactions on Networking. He served on TPC of various conferences in networking, including Sigmetrics, Sigcomm, Infocom. He was the recipient of the 1996 EPFL Ph.D. Award and of the 2008 Crédit Suisse Best Teaching Award.)