

Roberto Imbuzeiro Oliveira

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Research interests

My general fields are Discrete Mathematics, Probability, Theoretical Computer Science and Quantum Information Theory. In the first two fields, I am mainly interested in questions with a Statistical Physics flavor, such as phase transitions and scaling properties of discrete models. My work in Theoretical Computer Science deals with applications of pseudorandomness to Cryptography, and my current interest in Quantum Information Theory is in generalizing tools and results from its classical counterpart.

Education

Courant Institute of Mathematical Sciences, New York University (NYU)
Ph.D., Mathematics, expected September 2005. Advisor: Joel Spencer

Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil
M.S., Mathematics, July 2000. Advisor: Marcelo Viana

Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), Brazil
B.S., Mathematics, January 1999.

Experience

Courant Institute, NYU Sep 2001 - present
Ph.D. research on Discrete Mathematics and Probability with professor Joel Spencer. Current topics: balls-in-bins processes with feedback and models for growing networks (Spring 2002/present).
Research assistant to professor Yevgeniy Dodis. Working on randomness extraction and cryptography with weak random sources (2003).
Grader for the graduate class “Introduction to Cryptography” taught by professor Yevgeniy Dodis (Fall 2001).

Citynet project, Rio de Janeiro, Brazil Jul 1998 - Dec 1998
Technical manager. Designed and implemented the first version of this website (a guide to Brazilian towns).

MHW Informática (a Xerox company), Rio de Janeiro, Brazil Aug 1997 - Nov 1998
Computer programmer. Part of the development team of the web-based training environment Universite.

PUC-Rio Mar 1996 - Aug 1998
Teaching assistant for Freshman Calculus (Honors) at PUC-Rio (1997).
Undergraduate research assistant in two projects: Differential geometry using Mathematica;
and Complex variables and minimal surfaces (1996-1998).

Awards and Distinctions

Santa Fe Institute Jun 2003
Accepted for (and attended) the 2003 Complex Systems Summer School.

CNPq Fellowships for M.S. and Ph.D. studies Mar 1999 - Sep 2004
Awarded by CNPq (Brazilian science and technology council) for Ph.D. and M.S. studies.
Both include full tuition and a living stipend.

CNPq Fellowship for Undergraduate Student Research Mar 1996 - Aug 1997
Stipend awarded for undergraduate research assistantship.

Certificate of Excellent Academic Performance, PUC-Rio 1995 and 1996
Awarded to top 10% freshmen and sophomores each year.

Academic Performance Fellowship, PUC-Rio Mar 1995 - Jan 1999
Full tuition scholarship for all 4 years of undergraduate studies.

Honors mention in the Brazilian Mathematical Olympiad Jul 1991
Among top 25 competitors in the Junior category.

Other activities

- Member of the steering board of the Courant Institute Student Organization (2002).
- Member of the board of the Graduate Student Association at IMPA (1999 and 2000).
- Undergraduate representative of the Mathematics Department at PUC-Rio (1997).
- Volunteer mathematics teacher for low-income children through NEAM (Center for Child Studies and Assistance) of PUC-Rio (1995 and 1996).

Publications

- R. Oliveira, J. Spencer. Connectivity transitions in networks with non-linear preferential attachment. In preparation.
- R. Oliveira, J. Spencer. Asymptotics and distributions of balls-in-bins processes with feedback. In preparation.
- Y. Dodis, R. Oliveira. On obtaining private randomness over a public channel. In *Proceedings of APPROX-RANDOM 2003*, Lecture Notes in Computer Science, Springer Verlag 2003.
- M. Mitzenmacher, R. Oliveira, J. Spencer. A scaling result for explosive processes. Submitted to the Electronic Journal of Combinatorics.