ALEIX PRATS FERRER

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EDUCATION

PhD Thesis: Theoretical Physics, Barcelona University. September 2005
Tittle: "Analytical and numerical studies of random surface models and the QCD string."
Mention: Excellent cum laude

Master's equivalent: Final Projects: September 2002
- "Tree level scattering amplitudes in String Theory" (Directed by J. Gomis)
- "Plaquette-like Interaction Spin Glass in 4D" (Directed by F. Ritort)

Barcelona University.

Bachelors degree: Physics degree, Barcelona University, September 2000

WORKING EXPERIENCE

Postdoctoral research fellow, Montreal, (Quebec). 2007-2010
Centre de Recherches Mathématiques.

- Quick assimilation of new knowledge. Generalization of known facts in Random Matrix Theory to more abstract settings.
- Define and supervise a research project for an undergraduate student. I took over this full-time professor's task when an undergraduate student was left without supervisor.
- Original Mathematical Physics research in Random Matrix Theory resulting in 4 peer-reviewed articles and presented at 2 international conferences.

Postdoctoral research fellow, Paris, France. 2005-2007
Service de Physique Théorique and *Laboratoire de Physique Théorique et Hautes Énergies.*

- Complete change of research field from Quantum Field Theory and Statistical Physics to Random Matrix Theory. Familiarization and understanding of the new subject and all related mathematical tools.
- Original Mathematical Physics research in Random Matrix Theory resulting in 3 peer-reviewed articles and presented at 3 international conferences.

PhD student, Barcelona, Spain. 2000-2005
Department of Structure and constituents of matter, Barcelona University.

- Improve efficiency of a simulation algorithm for a physical model and implementation in Fortran.
- Analysis and interpretation of numerical data with original theoretical framework.
- Theoretical calculations in string theory-inspired quantum field theory models.
- Original Mathematical Physics research in Quantum Field Theory and Statistical Physics resulting in 5 peer-reviewed articles and presented at 3 international conferences.

COMPUTER SKILLS

- Programming: Advanced skills on numerical algorithms in Fortran language (3 year experience during PhD). Good programming skills in Mathematica and Latex. Generic knowledge in object oriented programming.
- Image manipulation software: Generic knowledge of Lightroom, Photoshop and Gimp applications.
- Other: User level knowledge of Windows and Linux operating systems and, Microsoft Office and Open Office suites.

Teaching Experience

Research Professor, Montreal, (Quebec) 2007-2010
Department of mathematics and statistics, Concordia University.

- Taught 6 undergraduate courses in advanced mathematics. Tasks included tutoring students, assigning homework, creating midterm and final exams, as well as marking exams and deciding final grades.
- Obtained better than average results when compared to same year and previous years statistics.
- Ability to explain abstract mathematical concepts to students with a non-scientific careers.

Undergraduate Student Research Supervisor, Montreal, (Quebec) Summer 2008
Centre de Recherches Mathématiques, University of Montreal.

Tittle: "Introduction and analysis of the random-matrix-model theory." (Student: Rosalie Plantefève)

- Independently created and supervised a research project, a task usually reserved to full-time professors.
- Supervised the student's research and taught the theoretical, analytical and computational skills necessary.

Assistant Professor, Barcelona, Spain. 2003-2004
Department of Structure and Constituents of matter, Barcelona University.

- Explain the assignment's solutions to 60-80 students class in 2 undergraduate courses for Physicists.
- Supervised and helped students in Fundamental Physics laboratory during one semester.
- Grade assignments and laboratory reports.

Selected Publications

- Prats Ferrer, A., "New recursive residue formulas for the topological expansion of the Cauchy Matrix Model" JHEP (2010), no. 10, pp. 1-52.
- Eynard, B., Prats Ferrer, A., "Topological expansion of the chain of matrices" JHEP (2008) no. 7, 096.
- Bertola, M., Prats Ferrer, A., "Harish-Chandra Integrals as Nil-potent integrals" Int. Math. Res. Not. IMRN 2008, no. 16, ID: rnn062, 15pp.

Honors and Awards

- ISM postdoctoral research fellowship, Montreal (Quebec) 2007-2010
  Centre de Recherches Mathématiques (Université de Montréal).
- Marie Curie postdoctoral research fellowship, Paris, France. 2005-2007
  Laboratoire de Physique Théorique et Hautes Énergies (Université de Paris VI) and *Service de Physique Théorique* (CEA-SACLAY).
- FPI PhD fellowship, Barcelona, Spain. 2000-2004
  Department of Structure and Constituents of Matter (Barcelona University).

Languages

Fluent in both written and spoken English and French. Native in Catalan and Spanish.

Other Interests

- Swing Dance: For the past 9 years I have been dancing, teaching, competing and performing locally and internationally.
- Music: In 2007 I began playing upright bass. Since 2009 I have been performing and organizing concerts and jam sessions regularly.
- Sports: During high-school and into the first undergraduate year I participated in rowing competitions at a regional (several gold medals) and national level (placed in finals) in Spain.
- Other: I co-founded the photography club at the physics faculty in Barcelona and was involved in several cultural activities like amateur musical-theater, organizing music concerts and others. I am also interested in science philosophy and science vulgarization.