Paolo Baldi Vitae

Professore Ordinario of Metodi Matematici e Statistici, Università di Roma Tor Vergata (since 1990) Previous positions: Catania (Professore Ordinario), Pisa (Professore Associato, Assistente)

Author, as for today (march 2012), of 49 publications reviwed on MathSciNet with 195 citations and of 8 books.

Education Laurea in Matematica (Pisa 1971) Docteur d'Etat ès Sciences (Université P.et M. Curie, Paris 6, 1985)

Visiting positions Various positions as Professeur Associé or, previously, Maitre de Conference Associé, at the Universities

Paris 6, Pierre et Marie Curie Paris 7 Paris 10 Nanterre Paris 11 (Paris-sud, Orsay) INRIA Paris Laboratoire Signaux et Systemes, Saclay

## Research

At first (1974-1984) the research activity has been devoted to the study of problems of transience/recurrence for random walks and limit theorems on groups, with results on the characterization of the Lie groups that are recurrent, on the local central limit theorems and developing, in a non-abelian setting, the use of group representations (as a replacement of the Fourier transform).

Next my interest moved to Large Deviations, with results of interest both from theoretical and applied point of view. In particular were found

\*results on the behavior of diffusion processes obtained by a perturbation with a small noise ordinary equations in absence of uniqueness and exhibiting a Peano phenomenon,

\*applications to the Iterated Logarithm law for diffusion processes

\*a general version for Diffusion Processes of P.Lévy's modulus of continuity,

\*an infinite dimensional extension of the Ellis-Gartner theorem,

\*Large Deviation estimates of Ventsel-Freidlin type in presence of stochastic homogenization,

\*Large Deviation estimates in Holder norm,

\*sharp Large Deviation estimates for conditioned processes (Brownian bridges...) with applications to simulation and Finance,

\*applications to importance sampling, in particular for continuous time Markov chains, Gibbs fields and the fractional Brownian motion.

More recently problems concerning invariant random fields on the sphere and, more generally, homogeneous spaces were investigated. These problems are motivated by applications to the investigation of the Cosmic Microwave Background, in Cosmology. More precisely the results obtained concern the following problems.

\*Characterization of the invariant random fields having independent Fourier coefficients were given in the non-abelian case (they are necessarily Gaussian). \*Methods of needlets for the statistical analysis of the power spectrum of random fields on the sphere and for the estimation of the density of directional.

Finally a collaboration with the Laboratorio di Ecologia Sperimentale ed Acquacoltura of the University Roma Tor Vergata has led to the development of stochastic models of growth for fish populations.

For the complete list of publications: http://mat.uniroma2.it/~processi/pub99.html