

## ROBERTO BENZI



Roberto Benzi was born in Rome in 1952. He graduated with a degree in physics in July 1975. After working for the Italian National Research Council (Consiglio Nazionale delle Ricerche – CNR), he coordinated computational physics at the IBM Scientific Center in Rome until 1988, when he became Professor of Theoretical Physics at Rome's "Tor Vergata" university.

Between 1995 and 2003, he was a member of the IT Authority (Autorità per l'Informatica), today's National Centre for IT in Government (Centro Nazionale per l'Informatica nella Pubblica Amministrazione – CNIPA). Since 2003, he has been science advisor to Lucio Stanca, Minister for Innovation and Technologies.

Prof. Benzi has carried out much of his research as a visiting professor to numerous, international research centers, including: the Courant Institute (New York); Yale University; the European Centre for Medium-Range Weather Forecasts (Reading, UK); Laboratoire de Météorologie Dynamique dell'École Normale Supérieure (Paris); U.L.B. (Université Libre de Bruxelles); Laboratoire de Physique Statistique dell'École Normale Supérieure of Lyon; Princeton University; the Weizmann Institute in Tel-Aviv.

In particular, the results of Prof. Benzi's research concern **meteorology and climatology, computational physics, turbulence theory** and **dynamic systems theory**. His main accomplishments include:

- The discovery of a new mechanism, known as "*stochastic resonance*", which has led to a new interpretation of climatic anomalies. This mechanism has been applied in many complex-system sectors of physics and biology.
- The formulation of a new algorithm for studying and simulating fluid dynamics and turbulence based on the *Lattice Boltzmann Equation* (LBE). In addition to its theoretical interest, this method permits the extremely efficient use of new parallel computer architecture; it is especially useful in simulating turbulent fluids in complex geometry.
- The discovery of *Extended Self-Similarity* (ESS), an approach that has dramatically improved the accuracy in measuring scaling exponents for turbulent flows.

In 2005, Roberto Benzi has won the prestigious EGU Lewis Fry Richardson Medal for “his original work on hydrodynamic stability, stochastic resonance in climate change, lattice Boltzmann methods, and the theoretical and numerical aspects of turbulence.”

The Lewis Fry Richardson Medal has been established by the Division on Nonlinear Processes in Geophysics in recognition of the scientific achievement of Lewis Fry Richardson. It is reserved for scientists for their exceptional contributions to nonlinear geosciences in general.

Prof. Benzi has published over 150 papers in international journals.