

**ON THE OCCASION OF
THE SEVENTIETH BIRTHDAY
OF PROFESSOR GUO BOLING**



Professor Guo Boling

Resume of Professor Guo Boling

Professor Boling Guo, Academician of Chinese Academy of Sciences, born on October 23, 1936, in Longyan, Fujian, China, is now working in Beijing Institute of Applied Physics and Computational Mathematics (IAPCM).

After four years' studies, he graduated from the department of mathematics, Fudan University in September, 1958. He was an assistant professor of this department after his graduation until January, 1963 when he joined the institute which he is now working in. He was first an assistant professor from February, 1963, to October, 1982, in

IAPCM, then an associate professor from December, 1982, to October, 1987, and finally a professor from October, 1987 up to now. Professor Guo began to supervise Ph.D students in 1990.

From 1989 to 1995, he was a member of the mathematical division, appraising committee of the National Natural Scientific Foundation Committee of China. He was also the director of the Nonlinear Center, IAPCM, from 1994 to 1998 and now the vice director of the academic committee of this center. From 1988 to 1996, he was one of the councilors of the Chinese Mathematical Society. He was also the standing councilor and then vice chairman of Beijing Mathematical Society from 1994 to 2000.

In November, 2001, professor Guo was elected to be an Academician of Chinese Academy of Sciences. Up to now he has published over 300 research papers and seven books.

Scientific Achievements

Professor Guo has made great contributions in his research fields, nonlinear evolutionary equations and their numerical solutions, solitons and infinite dimensional dynamical systems.

He has made systematical and deep studies for some important nonlinear evolutionary equations arising from mechanics and physics, including the global existence, uniqueness, regularity, asymptotic behavior and blow-up phenomenon. Such results have formed an integrated theoretical system as included in his books.

Infinite Dimensional Dynamical Systems

The first aspect of his researches is the studies on a series important dynamical systems of infinite dimensions. His contributions in this field are the theories to establish existences of global attractors, inertial manifolds and approximate inertial manifolds, fine estimate for their fractal dimensions. He created a new method to prove the existence of strong and compact attractors. Then he used discrete and numerical methods to make theoretical analysis and simulations and showed us the figures of the constructions of the attractors.

New Explorations on the Theory of Infinite Dimensional Dynamical Systems and New Results on Approximate Integrable Infinite Dimensional Dynamical Systems

For the nonlinear quintic Ginzburg-Landau equations, Guo transformed them into finite dimensional problem by spatial discretion and then proved that this problem admits discrete attractors. Then he considered the constructions of the steady state solutions, slow time periodic solutions and heteroclinic orbits. Combining the theory and method of finite dimensional dynamical systems with numerical simulations, he obtained the constructions and fractal dimension (less than 4) of the attractors and showed us the figures of the process how the system becomes chaos and finally goes into turbulence. This was viewed a new exploration to understand the fine constructions of the global attractors which will give us many enlightenments to study other equations.