



EDITORIAL



Manuel G. Velarde

On 14 September 2001, Manuel G. Velarde celebrated his 60th birthday. This special issue contains review papers and articles that his colleagues, friends and associates dedicate to him as a tribute to his contributions to science and his stimulating personality.

My own friendship with Manuel begins in 1965. He was then starting his Ph.D. in the University of Brussels, at a time when I was about to complete mine. Since then the “little provincial boy” as he still likes to refer to himself in the early years (it sounds even better in everyday spoken French: *petit mec*) became an authority of international renown on non-linear dynamics and related topics of fluid and interfacial science, a talented teacher, a restless organizer, as well as an enthusiastic and much appreciated partner and interlocutor in international meetings and joint international ventures.

Manuel G. Velarde was born in Almeria, south of Spain, on 14 September 1941. He obtained a diploma in physics from Universidad Complutense in 1963 and a Ph.D. in physics from the Université Libre de Bruxelles in 1970 on nonequilibrium statistical mechanics under the direction of the late P. Résibois. After a post-doctoral stay with I. Prigogine and R. Schechter in the University of Texas at Austin, he joined in 1971 the Faculty of the Universidad Autonoma of Madrid where he founded the department of fluid physics. During the period of 1979–1993 he was a professor in U.N.E.D., the Spanish Open University, where he founded the department of physics. Since 1993 he is a professor in Universidad Complutense of Madrid, where he co-founded the Instituto Pluridisciplinar. In 2002, he was elected Rector of the International Centre for Mechanical Sciences in Udine, Italy. He has held numerous visiting positions all over the world and has received several honorary awards. He is the author of 9 books and of 362 articles.

Manuel has made important contributions in various major problems related to nonlinear science. His formulation of instability thresholds in fluids with Soret effect, beautifully confirmed by experiment and still cited 30 years after publication opened the way to the analysis of many thermohydrodynamic instabilities. His pioneering formulation of instability phenomena at interfaces (liquid layers, drops) has led to new discoveries (theory, experiment and numerics) both in pattern forming systems and in nonlinear wave propagation, e.g. dissipative solitons, with implications well beyond fluid physics. Moreover, his long standing interest in the dynamics of cooperative phenomena in reaction–diffusion systems and in lattices of coupled active units has recently led to the modeling of inferior olive neuron dynamics and other aspects of cerebellar dynamics, thus providing theoretical support to twenty-year old experimental results and opening a new path for our understanding of the cerebellum control of movement.

From the very beginning of his career Manuel manifested a deep devotion to the education of Spanish scientists and of the Spanish youth. He has been running a 25-year lecturing program in elementary and high schools and in cultural centers all over Spain. Furthermore, he has a long and superb record of international scientific cooperation: director of no less than 40 international meetings and schools, member of organizing committees, active participant of international collaborative programs.

An intense activity of this kind cannot be sustained without a family-rooted complicity. Pilar is primarily responsible for this unfailing support.

Manuel's approach to science is a very personal one. He can be quite technical whenever it proves necessary, but his principal signature is a lucid reasoning based on an inimitable art to provide intuitive explanations and order of magnitude estimates. He often comes to seminars and international meetings with an impressive package of transparencies full of formulas and figures. Yet in his talks he spends most of his time on the very first transparencies on which he adds extra comments and estimates of all sorts, in a multitude of colors, in a translationally and even rotationally invariant way!

The contents of this special issue reflect well Manuel's multiple interests, interdisciplinary dimension and international audience. They can be classified in seven broad areas, each of which has been marked by his own contributions: Reviews (Borckmans *et al.*, Rodriguez-Bernal, Segel); statistical mechanics and stochastic processes (Pomeau, Ebeling *et al.*, Kozak and Balakrishnan, Dehesa *et al.*); solitons (Feng and Kawahara, Grimshaw and Pelinovsky, Nekorkin and Kazantsov, Christov); general nonlinear science, including pattern formation (Coullet, Descalzi *et al.*, Diaz-Sierra and Fairén, Belhaq and Lakrad); fluids, combustion and atmospheric flows (Golovin *et al.*, Mercader *et al.*, Castellanos *et al.*, Clavin, Kurdyunov and Linan, Nicolis); nonlinear optics and chemistry (Lugiato *et al.*, Takagi and Kaneko, Vlad *et al.*); and biophysics (Haken, Hao, Mori and Kai, Montejo *et al.*).

On behalf of the contributors to this issue, of Professor L. O. Chua who kindly accepted to host this tribute to Manuel in the *International Journal of Bifurcation and Chaos*, and of the entire nonlinear science community, I wish Manuel a long and happy life, full of joy and satisfaction at both personal and professional levels.

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