Salvatore Rionero and his major contributions to Mathematical Physics

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Professor Salvatore Rionero has deeply contributed to the development of Mathematical Physics.

In particular, he has been one of the organizers, and for many years the Director, of the Summer school on Mathematical Physics mainly addressed to young researchers (38 editions). He was the founder (with A.M. Anile) of the long lasting series of conferences Waves and Stability in Continuous Media (WASCOM).

His scientific results are mainly devoted to: fluid mechanics, magneto-fluid mechanics, flows in porous media, partial differential equations (reaction-diffusion systems), ordinary differential equations, biology and other natural sciences, functional analysis, mechanics of solids, geophysics, history and biography, mechanics of particles and systems, statistical mechanics, structure of matter.

In this talk some of the major contributions of Prof. Rionero to Gyroscopic effect; Variational methods in fluid mechanics (maximum theorem); Weight function and stability in fluid mechanics and elastodynamics in exterior domains; Nonlinear stability conditions in Fluid dynamics and Magneto-fluid dynamics with the suitable choice of a Lyapunov function; Qualitative analysis and well posedness in PDEs (Reaction-diffusion systems, Elasticity, Biomathematics); recent results on a Lyapunov function built via the eigenvalues of linear operator and a new approach for the onset of porous convection are briefly presented, [1–12].