

## Preface

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Roberto Petronzio, an outstanding theoretical physicist and former President of the INFN, passed away on the 28th of July 2016 at the age of 67 after a long and dramatic illness.

One year after, we have organized a symposium in his honor that was held in the magnificent venue of Villa Mondragone in Monte Porzio Catone, a property of the University of Rome Tor Vergata.

On the day of the symposium (13 June), the gorgeous room of Villa Mondragone called “Sala degli Svizzeri” was full of former colleagues, friends, students and collaborators of Roberto. The atmosphere was cheerful and relaxed and all attendees had a real pleasure to remember Roberto’s achievements as a theoretical physicist and as a science manager, the deep passion, enthusiasm and determination that accompanied his work as a scientist, as a university professor at the University of Rome Tor Vergata and as the President of the INFN. Each remembrance speech evoked deep emotions in all of us.

Roberto’s fundamental contributions on many aspects of modern theoretical particle physics have been reviewed in fascinating talks given by prominent scientists who had the pleasure to share his friendship and to collaborate with him at different stages of his career: Fernando Ferroni, Martin Luescher, Luciano Maiani, Antonio Masiero together with Paride Paradisi, Giorgio Parisi, Augusto Sagnotti and Gabriele Veneziano. The written versions of their talks are collected in this volume.

Fernando Ferroni remembered Roberto as a master in the Laguerre method to solve integro-differential equations in high energy scattering processes and during the nine years he guided the INFN with excellent skills and vision in a rapidly changing political and scientific environment.

Luciano Maiani and Giorgio Parisi recalled their long-lasting collaboration and close friendship with Roberto, from the starting of his career — as a student of Nicola Cabibbo in Rome — to the very last days of his life. A beautiful piece of the recent history of theoretical particle physics is reviewed in their talks: the fundamental, illuminated and visionary contributions given by the Rome school during the seventies and the eighties to the understanding of the dynamical and phenomenological implications of the “new” Standard Theory of fundamental interactions (by that time). The prominent role played by Roberto is clearly emerging.

The talk of Gabriele Veneziano was focused on the years that Roberto spent at CERN and on their extremely fruitful collaboration. The relevant contributions that Roberto

gave to perturbative QCD in order to reconcile the parton model with the fundamental theory of strong interactions are recollected in his talk.

Martin Luescher remembered his friendship and fruitful collaboration with Roberto in the field of Lattice QCD by focusing on their common work on the calculation of the strong coupling constant and on the inclusion of dynamical fermions in (what since then became) realistic simulations of the theory of strong interactions.

Antonio Masiero and Paride Paradisi recalled their works with Roberto on the search of New Physics in lepton flavor universality violating observables, highlighting his creative, visionary and youthful way of approaching physics and life.

Augusto Sagnotti recalled Roberto's role at the University of Tor Vergata, by focusing on his dedication in teaching theoretical physics courses (he continued to teach also when he was in charge of INFN) and on the effort he put in shaping the theoretical group of his university over the years.

From all talks, in addition to the relevant contributions to theoretical particle physics, a fascinating portrait of Roberto was emerging: an outstanding scientist, an elegant and effective speaker, a dedicated teacher, a charismatic leader, a convincing and ahead-of-his-time science manager. In a word, a great man we all will sorely miss!