A special seminar at CERN on 8 June, marking the 65th birthday of Ugo Amaldi, underlined his wide-ranging and widely admired contributions to science, covering experiment, theory, accelerators, applications, education and literature. Like his illustrious father, CERN pioneer Edoardo, Ugo’s contributions to science appear to stem from a deep sense of duty rather than personal ambition.

Amaldi’s experimental physics career spans a long series of experiments, which over the years have made significant contributions to our increased understanding of particle interactions at increasingly complex installations (described at the seminar by Paul Langacker of Pennsylvania).

Amaldi, founding father of the DELPHI experiment at CERN’s LEP electron–positron collider in the 1980s, gathered together an enthusiastic band of collaborators to work on a major new detector, incorporating technology that was very challenging at the time (recalled by Daniello Treille of CERN).

He was also the Chairman of the working group for what was to become the HERA electron–proton collider at DESY Hamburg, approved for construction in 1984 and now one of the major machines on the world scene (covered by Günter Wolf of DESY).

Also on the machine side, in the 1980s Amaldi made pioneer contributions to the development of far-sighted ideas on linear electron–positron colliders, including the use of superconducting radiofrequency technology. Only now are such machines emerging as one of the main avenues for future high-energy physics progress (described by Wolfgang Schnell of CERN).

As accumulated results from many experiments underlined the coherence of the contemporary Standard Model, at the end of the 1980s and early 1990s, Amaldi and his collaborators pointed out that the extrapolated results from these experiments did not converge to a common point at high energy, as would be required by a Grand Unified Theory synthesizing both strong and electroweak interactions. Convergence required the appearance of new effects, such as supersymmetry, at energies not yet attained in the lab. Langacker pointed out the irony of such heavyweight theoretical ideas coming from a physicist mainly known as an experimentalist.

Amaldi’s most recent contribution returns to an early career theme. After the potential of particle beams for cancer therapy was pointed out in the 1930s, Enrico Fermi pushed for a new Istituto Superiore di Sanità in Rome to provide the necessary machines and beams. It was at this institute that Amaldi made his first contributions to physics, working on radiation protection. Some 30 years later he promoted the use of ion beams for therapy in Europe and masterminded the TERA Foundation to provide hadron beams for cancer therapy, skilfully managing administrators, funding agencies, and machine and medical specialists (recounted by M Goitein, Northeast Proton Therapy Center, Boston).

Ugo Amaldi is the scion of an illustrious Italian scientific family. Both his father and his grandfather wrote standard texts. He has continued and extended this distinguished tradition, which now even extends to a fourth Amaldi generation (F Enriquez, Zanichelli, Bologna).