József Zimányi 1931–2006

József Zimányi, the high-energy nuclear physicist who first established relativistic heavy-ion research in Hungary, died on 26 September 2006. His passing is a great loss for Hungarian and European science, especially for the heavy-ion community.

Józso (as he was known to his friends) was born in Budapest in 1931. He caught the physics bug at an early age: at 16 he constructed a small model of Europe’s first Moon radar experiment in Zoltán Bay. After graduating with a PhD in physics from the Eötvös Loránd University, he moved to the Central Research Institute for Physics in Budapest – an institute he remained faithful to for more than 50 years.

He first worked on nuclear spectroscopy experiments, where his speciality was measuring $\gamma-\gamma$ angular correlations in nuclear decays. After 15 years of successful work in this area, his interest shifted to the new field of heavy-ion collisions. In 1969 he visited the Niels Bohr Institute in Copenhagen where discussions were taking place about the potential of colliding heavy ions at high energies. He joined the enthusiastic group of “heavy-ion physicists” and was frequently invited to participate in their common research work in Copenhagen.

In parallel, Józso began to build bases in Budapest. He became head of the Theoretical Physics Department in 1973, which, through his tireless efforts, he gradually transformed into one of the leading theoretical centres for heavy-ion physics. In the mid-1970s, he began publishing theoretical papers. His first, a widely appreciated theoretical work, discussed hydrodynamical aspects of heavy-ion collisions and became famous as the Bondorf–Garman–Zimányi model. To follow non-equilibrium processes, he also developed the Montvay–Zimányi hydrochemical model. When experimental results from the BEVALAC at Berkeley ignited widespread interest, he investigated properties of pionic Bose–Einstein condensation. He later made an excursion into biophysics, investigating pattern recognition with neural networks.

At every stage, Józso’s exciting work and enthusiastic personality attracted many talented students, who he advised and nurtured with great care. He used his many international connections to expose them to foreign academic cultures and new ideas. This was the secret behind his successful establishment of the Budapest school. Józso used to say, “A successful model must be simple and effective, just like a shaving blade.”

Józso strongly supported Hungarian participation in CERN’s extended heavy-ion research programme in the 1990s. He masterminded Hungary’s membership of CERN in 1992, which opened up new opportunities for Hungarian physicists; he himself became a member of the NA49 Collaboration. He represented Hungary on the CERN Council and was a member of the Hungarian CERN committee from 1992 to 2004. Józso provided his full support for Hungarian activities in the ALICE experiment at the LHC and for the founding of the Budapest LHC Grid station at the Research Institute for Particle and Nuclear Physics (RMKI). In addition, he supported the activity of the Hungarian PHENIX group, which since 2001 has participated in ultrarelativistic heavy-ion experiments at RHIC in Brookhaven. Józso also played an active role in re-organizing the Hungarian scientific grant system with his extensive experience with foreign funding agencies. He and his colleagues created a peer-review system similar to that of the National Science Foundation in the US. The Hungarian system, OTKA, has worked successfully for the past 15 years.

Despite all of these administrative duties, Józso never lost his active touch with physics. These same years saw the birth of the Zimányi–Moszkowski model for an improved mean-field theoretical description of nuclear matter; of the SPACER model for full-scale pion interferometry investigations; and of the ALCOR coalescence model to explain hadronic production ratios at CERN’s SPS, which garnered even greater success when experimental results from RHIC lent strong support to the existence of a quark coalescence mechanism for hadron production at intermediate transverse momenta. Józso became a member of the Hungarian Academy of Sciences in 1990 and the European Academy of Arts, Sciences and Humanities elected him to membership in 1997. In 1992 he received the Officer Cross of the Order of Merit of the Hungarian Republic, and the Széchenyi Prize was bestowed upon him by the President of Hungary in 2000. Józso was working until his last days with the same extraordinary activity and driving force that has been an inspiration to his students and close colleagues throughout his life. His students, friends and followers feel a great loss; they will keep his heritage alive in Budapest and around the world.

- A workshop was held in Zimányi’s memory in July 2007, see www.kfki.hu/zj75/.
- Ulrich Heinz, Ohio State University, and Péter Lévai, RMKI Budapest.