

III. OBITUARIES

LESZEK ŁUKASZUK (1938-2007)



On July 12th, 2007, Professor Leszek Łukaszuk passed away, after an unexpected return of an earlier sickness. He was an excellent physicist, a very good teacher, a man with strong character but also very warm.

Leszek Łukaszuk was born on March 25th 1938, in Wegrow, where he also finished secondary school. Till June 1959 he studied physics at the Department of Mathematics and Physics of Warsaw University. After physics studies Leszek Łukaszuk began to work as an assistant in the Institute of Theoretical Physics of Warsaw University. He moved to the Department of Nuclear Physics of the Institute for Nuclear Research.

Between March 1965 and March 1966 Leszek Łukaszuk worked at CERN, where he started a long and fruitful collaboration with Andre Martin (CERN).

The research concentrated on the derivation of bounds imposed on scattering amplitudes by fundamental properties of strong interactions. These properties imply the existence of a domain of analyticity of scattering amplitudes, which together with short-range properties of strong interactions limits their strength at high energies and leads to sum rules for cross sections. This classical result appears in the literature as the Łukaszuk-Martin bound. In March 1966 Leszek Łukaszuk moved for one year to the Cavendish Laboratory, where he continued the aforementioned research.

In 1972 he was awarded the degree of DSc. Shortly after, from October 1972 till December 1973 Leszek Łukaszuk worked at the Laboratory of Theoretical Physics at the Physics Department of University Paris VI. Here he started a collaboration with Basarab Nicolescu on the description of hadronic

cross sections. By adapting a point of view that "what is not forbidden by theoretical grounds is allowed" they proposed an unusual interpretation of these data by assuming that two components of the scattering amplitude, with even and odd charge parity, should be of equal importance. This led to introduction of a new Regge theory exchange, the Odderon, being the odd charge parity partner of the well-known even charge parity Pomeron. The concept of an Odderon has been a very intriguing and lively subject of both theoretical and experimental studies. The dynamics of Pomeron and Odderon seem to be well described within the theory of fundamental interactions such as Quantum Chromodynamics.

With the advent of Quantum Chromodynamics, the scientific interests of Leszek Łukaszuk since the middle of the 70's concentrated on different phenomena within this theory of fundamental interactions. In particular, the problem of reggeization of vector mesons in non-abelian gauge theories is studied in an attempt to reconcile the prediction of the non-perturbative Regge theory with those obtained within a theoretical approach based on perturbation theory. He made a contribution to the formulation of the Multichannel Bethe-Salpeter Equation. He was also interested in the description of processes involving heavy quarks or in more formal problems appearing in a formulation of non-abelian gauge theories in contour gauges.

Recently Leszek Łukaszuk was interested in the so-called super convergence relations and the derivation of a parity violating analog of the GDH sum rule (Gerasimov, Drell, Hearn) in electroweak theory as well as in effective theories like chiral perturbation theory.

His last important contribution was related to the possibility of searching for Majorana neutrinos with double beta decay and using so-called beta beams.

Leszek was always convinced that the duty of a scientist goes beyond research. It should extend to social domains, require high ethical standards and a clear personal responsibility. His conduct during the Solidarity turmoil period is a proof of that.

He refused to take an appointment in our Institute as a gesture of solidarity with a friend and was exiled to Szczecin for 10 years. Leszek was head of the graduate school of our Institute for the last 10 years of his life. He promoted 3 PhD students who warmly remember his guidance and remained loyal friends to the end.

Krzysztof Kurek
Lech Szymanowski
Sławomir Wycech