

In Memoriam: Janusz Wilczyński (1938–2015)



Janusz Wilczyński

Born on 27 August 1938 in Gniezno (an old Polish town, the first capital of Poland), Janusz graduated in 1961 from the Mathematics, Physics and Chemistry Department of the Jagiellonian University in Kraków. The topic of his diploma was experimental nuclear physics. Directly after this, he started work in the same department of the university under the leadership of Professors Henryk Niewodniczański and Adam Strzałkowski.

The years 1963–1966 and 1967–1972 he spent at the Laboratory of Nuclear Reactions (in the group of Professor V. V. Volkov) of the Joint Institute of Nuclear Research (JINR) in Dubna. These were the years of early, pioneering work on heavy-ion reactions. Janusz enthusiastically joined these studies.

Very characteristic of him was hard, ambitious, original, and inge-

nious work on the interpretation of the results obtained in experiments. This quite often resulted in interesting and important discoveries. For example, analyzing the limitations on the cross-section of the compound nucleus, he introduced the notion of the “contact force,” that is, the attractive nuclear force when two nuclei come into contact via their surfaces. The value of this force, estimated by him with the use of the liquid-drop model, gave very good results for the critical angular momentum. The notion of the contact force was generalized by W. J. Świątecki and co-workers in Berkeley to the proximity force, which is still used in nuclear physics.

Also very original and ingenious was his interpretation of deep inelastic reactions with the use of the classical deflection function. Here, the two-dimensional plot, known in the literature as “Wilczyński’s plot,” proved to be very useful.

In 1966 he started to work at the Institute of Nuclear Physics in Kraków. A year later, in 1967, Janusz defended his PhD work at the Jagiellonian University. In the same year he married Krystyna Siwek-Diamant. In 1973, Krystyna changed the topic of her scientific interests and joined Janusz in his work. In 1980, Janusz moved from Kraków to Warsaw, to work in the Sołtan Institute for Nuclear Studies in Świerk.

Throughout his scientific life, Janusz often visited institutes where experiments on heavy-ion reactions were carried out, participated in these experiments and worked on the interpretation of the results, mostly after his return home. He participated in experiments at JINR-Dubna (Russia),

at the Niels Bohr Institute in Copenhagen (Denmark), at the Institut de Physique Nucleaire in Orsay (France), at the Kernphysisch Versneller Instituut in Groningen (Holland), at the National Superconducting Cyclotron Laboratory in East Lansing (USA), at the Lawrence Berkeley National Laboratory (USA) and at the INFN di Catania (Italy; Figure 1, taken in 2010).

During these visits he participated in the discovery of deep inelastic reactions and applied, together with his co-workers, these reactions to produce about 30 new exotic nuclides (around argon) with large neutron excess. He also participated in the discovery of the non-complete fusion reaction, in systematic studies of this reaction and the formulation of the quantitative model of the two-body heavy-ion reaction (the so-called sum-rule model) as well as other studies.

Janusz Wilczyński received a number of awards and honors, among them: the individual Award of the Polish Physical Society (1976), individual 2nd Class Award of the Polish State Council for the Use of Nuclear Energy (1978), Golden Cross of Merit (1989), and the Knight’s Cross of the Order Polonia Restituta (2015).

He passed away on 22 October 2015 in Warsaw. Up to the last days he preserved a skilful mind and was working together with his wife Krystyna and his PhD student on their last publication.

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