



Professor Tadeusz Winiarski

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## TADEUSZ WINIARSKI – SCIENTIFIC BIOGRAPHY

Tadeusz Winiarski was born on September 10, 1940. He studied mathematics at the Jagiellonian University in 1961–1966. After receiving his master’s degree, he worked at the Institute of Mathematics of the Jagiellonian University, going through all stages of his scientific career from assistant to full professor until 2005, when he retired. He obtained his doctoral degree in 1971, and habilitation in 1982. In 1991, he obtained the title of professor. In 1986–1991 he was the Deputy Director of the Institute, and in 1991–2005 he headed the Chair of Analytic and Algebraic Geometry at the Institute of Mathematics. In the years 2001–2005 he was the President of the Kraków section of the Polish Mathematical Society. From 1997 he also worked for 13 years as full professor at the Institute of Mathematics of the Pedagogical University in Kraków.

Tadeusz Winiarski’s research and scientific activity can be broadly divided into four parts (with non-empty intersections):

- The approximation theory of complex analytic functions. This initial part of scientific activity was related to the doctoral dissertation prepared under the supervision of Professor Józef Siciak. His first publication from 1970, “Approximation and interpolation of entire function”, was extremely important. This work was inspiring and allowed for research in many directions by other mathematicians.

- Complex analytic and algebraic geometry. From around 1975, he began researching broadly understood analytic and algebraic geometry, starting to establish his own school at our Institute. Then a number of new interesting theories appear at the Institute. The combination of complex analysis with the theory of Hausdorff’s measure permitted to see more insightfully the differences between analytic and algebraic sets and obtained, with K. Rusek, some new criteria for the algebraicity of analytic sets and the regularity of analytic mappings. This field also inspired some directions of research concerning polynomial automorphisms and the Jacobian Conjecture.

- Intersection theory in complex analytic geometry. This branch of mathematics appeared at the Institute of Mathematics around 1980 thanks to Tadeusz Winiarski.

His work “Total number of intersection of analytic sets” from 1981 opened new wide possibilities. In particular, it contained the famous “local Bézout theorem”. Together with R. Achilles and P. Tworzewski he also developed a complete and fully recognized theory of improper intersections of isolated analytical sets in the work “On improper isolated intersection in complex analytic geometry” from 1990.

- Gröbner’s bases theory. This branch of effective methods of analytic and algebraic geometry, unique in Poland, was developed by Professor Winiarski in cooperation with the University of Leipzig. The works from 1996 and 1998 “Reduction of everywhere convergent power series with respect to Gröbner bases” and “Intersections of sequences of ideals generated by polynomials”, with J. Apel, J. Stückrad and P. Tworzewski, were very important. Professor Winiarski’s attempt to spread Gröbner bases theory among Polish mathematicians, physicists and engineers resulted in publication in 2007, with M. Dumnicki, the only Polish book on this topic: “Bazy Gröbnera – efektywne metody w układach równań wielomianowych”.

Professor Winiarski developed two completely new branches of mathematics in the Institute of Mathematics of the Jagiellonian University: “Intersection theory in complex analytic geometry” and “Gröbner bases theory”. His scientific activity is characterized by an outstanding ability to cooperate with other mathematicians. The fruit of his many years of cooperation with foreign centers in Bochum, Leipzig, Osnabrück and Marseille is a series of joint publications. His scientific contacts are of great benefit to our environment, also because of their high efficiency.

The same feature of the scientific activity of Professor Winiarski was the reason for his exceptional success in the field of education of young scientists. At his seminars, there were never enough problems to solve for everyone. In the years 1984–2006 he was the supervisor of eight doctoral dissertations and currently he has 25 descendants.

Since 1983 Professor Tadeusz Winiarski has been an active participant (and even a leading figure) in the Analytic and Algebraic Geometry Conferences organized annually by the Faculty of Mathematics and Computer Science of the University of Łódź.