

ANDRZEJ KRASIŃSKI  
RESUME OF CURRICULUM VITAE AND CAREER

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Professional status: Full Professor  
Date and place of birth: 19th October 1946, Warszawa, Poland  
Citizenship: Polish

**Stages of professional career and subjects of work:**

- 1968/69: M.S. Thesis in theoretical physics at the Department of Physics, Warsaw University; Einstein field equations in  $n$  dimensions with  $O(n - 1, C)$  symmetry.
- 21 June 1969: M. S. degree in theoretical physics at the Warsaw University
- 1969 – 1973: Graduate student at the Department of Physics, Warsaw University; Exact solutions of the Einstein field equations with a rotating perfect fluid source (PhD Thesis).
- 21 May 1973: PhD degree in theoretical physics at the Warsaw University
- 1973 – 1981: Research Associate at the N. Copernicus Astronomical Center, Polish Academy of Sciences, Warsaw, Poland; cosmological models with expansion and rotation generalizing those of Friedmann, geometrical characteristics of the Kerr solution and the problem of existence of its source, a computer program for algebraic calculations in general relativity, cosmological models with varying sign of spatial curvature.
- 1981 – 1982: At the Max Planck Institute for Astrophysics, Garching, Germany, as a Fellow of the Alexander von Humboldt Foundation; search for a perfect fluid source of the Kerr metric, distributing and improving the program for algebraic calculations, cosmological models with varying sign of spatial curvature, collineations of the Riemann tensor.
- 1983 (7 months): At the Department of Physics, Konstanz University, Germany, as a Fellow of the Deutsche Forschungsgemeinschaft; extending the program and transferring it to a new computer, cosmological models with varying sign of spatial curvature, shearfree nonrotating inhomogeneous cosmological models.
- 1983 – 1986: Research Associate at the N. Copernicus Astronomical Center, Warsaw, Poland; shearfree nonrotating inhomogeneous cosmological models, improving algorithms of the program.
- 1986 – 1988: Associate Professor at the N. Copernicus Astronomical Center, Polish Academy of Sciences; interdependences among known generalizations of the Friedmann cosmological models, unified representation of shearfree normal models, uniqueness of Wyman's barotropic model, early history of inhomogeneous models.
- 1989 (5 months): Visiting Assistant Professor at the Department of Mathematics, University of Colorado at Boulder (teaching position).
- 1989 – 1997: elected representative of Poland in the International Committee for General Relativity and Gravitation governing the International Society for GRG. Duties

included membership of the Editorial Board of the journal *General Relativity and Gravitation*.

1989 – 2010: Associate Professor at the N. Copernicus Astronomical Center, Polish Academy of Sciences; a complete review of inhomogeneous cosmological models in Einstein's theory (a book published by Cambridge Univ. Press 1997), thermodynamics in inhomogeneous spacetimes with no symmetry, classification of 3-dimensional algebras of symmetry groups in presence of rotating matter, rotating generalizations of the Friedmann models, implementation of the program with the Windows 98 and Linux systems, structure formation in the Lemaitre – Tolman model by exact methods of relativity (theory and numerical application to actual astronomical objects, in collaboration with Charles Hellaby and Krzysztof Bolejko), geometrical properties of the Szekeres solutions (in collaboration with Charles Hellaby), textbook on general relativity and cosmology (jointly with Jerzy Plebański, published by Cambridge University Press in 2006), nonsingular collapse of charged dust, a monograph on exact methods in cosmic structure formation (jointly with K. Bolejko, C. Hellaby and Marie-Noëlle Célérier, published by Cambridge University Press in 2009), corrections to pervasive misunderstandings in the literature on inhomogeneous models (jointly with K. Bolejko, C. Hellaby and Marie-Noëlle Célérier), redshift propagation equations in the Szekeres models (jointly with K. Bolejko).

1995 – 2002: Associate Editor of the journal of *General Relativity and Gravitation*. Duties included overseeing the refereeing process in selected subject areas and editorial oversight over a series of reprints of valuable old papers (*Golden Oldies*, GOs); in 1996 also editor of book reviews. The GOs were my personal creation (following the idea that came from Alan Held): until 2002 I was the only person in charge of them, the one who chose nearly all the entries, and the author of most editorial notes and author biographies.

2004 – 2013: elected representative of Poland in the International Committee for General Relativity and Gravitation (for a second time).

2006 – 2013: member of the Editorial Board of the journal of *General Relativity and Gravitation* and editor of the “Golden Oldies” series, also occasionally in charge of supervising referees. Beginning from 2006, the GOs were supervised by a three-person Advisory Board, created out of my initiative. In 2013, Springer published a volume containing a selection of 14 GOs (see my list of publications).

26 February 2010 – academic title of Full Professor.

1 April 2011 – post of Full Professor at the N. Copernicus Astronomical Center.

2011 up to now: Full Professor at the N. Copernicus Astronomical Center; repeatable light paths in shearfree normal cosmological models, apparent horizons in the Szekeres models, geometry of the quasi-hyperbolic Szekeres models (the last two jointly with K. Bolejko), geometry of and light propagation in the L–T models that mimic accelerated expansion, occurrence of blueshifts in the L–T models and its observable consequences, modelling the sources of gamma-ray bursts using blueshifts in the L–T models, conditions for the occurrence of blueshifts in quasi-spherical Szekeres models.

**Short-term (up to 3 months) foreign assignments:** Moscow University and Le-

ningrad (now St. Petersburg) University (1974), Instituto Politecnico Nacional, Mexico City (1977/78), Institute of Space Astrophysics, Frascati, Italy (1979, 1980 and 1982), University of Cologne, Germany (1981, 1983 and 1984), University of Aberdeen, England (1984), lecture tours of universities and conferences in India (1985, 1987 and 1999), University of Leipzig, Germany (1986), University of Pavia, Italy (1987), a lecture tour of US and Canadian universities (1989), Kyoto University, Japan (1991), National Autonomous University of Mexico (1994), Waseda University, Tokyo (1998), University of Cape Town, South Africa (2001, 2004 and 2006), University of Missouri at Columbia, USA (2010), University of Texas at Dallas (2010).

**Referee of PhD Theses:** 11 in Poland, 2 for Stockholm University (1981, K. Rosquist and 1989, C. Ugglä), 1 for Ahmedabad University (1987, B. Pandya); habilitation theses: 8 in Poland and 1 for Prague University (2000, A. Meszaros).

**Referee of several applications for professorships** (updated list available separately).

**International meetings:** 2 on average attended each year since 1980, member of Programme Committee of the Eurocal 87 conference in Leipzig (1987) and of the International Seminar on Mathematical Cosmology (Potsdam 1998), invited speaker at several meetings, workshop chairman at the Marcel Grossman Meeting 9 (Rome 2000), 10 (Rio de Janeiro 2003) and 11 (Berlin 2006), plenary speaker at the Grossman Meeting 10.

**Current research interests:** gravitation theory (particularly inhomogeneous cosmological models, spacetimes generated by rotating matter).

**Teaching experience in Poland:**

1. Exercises in general relativity (1969/70 and 1970/71, Warsaw University).
2. Exercises in mathematical methods of physics (1970/71, one semester, Warsaw University).
3. Lecturer at the Cracow Summer School of Cosmology (1976).
4. Lecture course on general relativity for students of astronomy (1977/78, 1983/84/85, 1986/87, Warsaw University).
5. Lecture course on gravitation theory for students of physics (1990/91, Warsaw University).
6. Lecture course on mathematical analysis (one full course lasted two years, 1994/95/96 and 1996/97/98, College of Sciences, Warsaw).
7. Lecture course on relativity for PhD students of astronomy (2002, one semester, Warsaw University).

**International teaching experience:**

8. Invited course at the International School of Relativistic Astrophysics, Erice (Italy), 1976.
9. Invited course at the Instructional Workshop on Advanced Aspects of General Relativity, Calcutta (India), 1987.
10. Undergraduate lecture course + exercises: Calculus 1 (1988/89, one semester, University of Colorado at Boulder, USA).
11. Graduate lecture course: Linear algebra and matrix theory (1988/89, one semester, University of Colorado at Boulder, USA).

**PhD student promoted:**

Krzysztof Bolejko, 2007.

**Popular science activities:** One academic year as the Editor of the physics section of the monthly magazine "Delta" in Poland, several popular articles and notes in various journals in Poland, lectures about physics for open public at irregular places and times in Poland and in India.

**Languages known:** Polish (mother language), English, German, Russian – on a good working level, some practice in Italian.

**Computer languages known:** expert in Lisp, fluent in WinEdt, LaTeX, MSWord, Fortran and Gnuplot, familiar with html and Unix.