

## Professor JURI POUTANEN

Department of Physics, P.O.Box 3000, FIN-90014 University of Oulu, Finland

Phone: +358-8-5531962; Fax: +358-8-5531934

E-mail: [juri.poutanen@oulu.fi](mailto:juri.poutanen@oulu.fi); <http://cc.oulu.fi/~jpoutane>

Born July 16, 1965, Leningrad, Russia; Finnish Citizen; Sex: Male

### Education

Docent of Theoretical Astrophysics, 1997, Uppsala University, Sweden

PhD in Astronomy, 1994, University of Helsinki, Finland

MSc in Astronomy, 1987, Leningrad University, Russia

**Languages:** English, Finnish, Russian, Swedish

### Positions

2001– Full Professor of Astronomy, University of Oulu, Finland

2004– Chair of the Astronomy program, University of Oulu, Finland

2005–2006 Senior scientist, Academy of Finland

2003–2005 Corresponding Fellow, Nordita, Copenhagen, Denmark

1997–2001 Research Associate, Stockholm Observatory, Sweden

1996–1997 Research Associate, Uppsala Observatory, Sweden

1994–1996 Postdoctoral Research Fellow, Stockholm Observatory, Sweden

1992–1994 Research Assistant, University of Helsinki, Finland

1991–1992 Junior Researcher, Leningrad University, Russia

**Memberships:** International Astronomical Union (1997-); Committee for Space Research (2000-); Finnish Physical Society (2004-), European Physical Society (2004-), Finnish Astronomical Society (2005-), European Astronomical Society (2011-), Finnish Society of Sciences and Letters (2009-),

### Awards and recognitions:

- NORDITA corresponding fellow (2003-2005)
- Senior research fellowship, Academy of Finland (2005)
- Distinguished visiting professor, Copernicus Astronomical Centre, Warsaw, Poland (2008)
- Member of the Finnish Society of Sciences and Letters (2009)

**Research Interests:** High energy astrophysics, plasma physics, radiative transfer

**Long term visits:** Tubingen Univ. (3w in 2010, 2w in 2011), Weizmann Inst. (2w in 2009), Hebrew Univ. (2w in 2008), Princeton Univ., 1.5 months, 2007-2008; Max-Planck Institute für Astrophysik (MPA), Garching, Germany (2m in 2006); SLAC, Stanford University (3m in 2006); University of Kyoto, Japan (2w in 2004); CNRS, Toulouse, France (2w in 2003); Cambridge University, UK (three visits in 1998–2000); Copernicus Astronomical Center in Warsaw, Poland (5-6 visits); MPA, Garching, Germany (2000); Yale University, New Haven, USA (number of visits in 1997, 1999, 2000); Johns Hopkins University, Baltimore, USA (1996); Inst. for Theoretical Physics, Univ. of California, Santa Barbara, USA (1995)

### Major research funding (2003-)

- 2009-2012 Academy of Finland, Research grant "Relativistic Astrophysics"
- 2007-2009 International Space Science Institute, Bern, grant for the program on "Observations and physics of accreting neutron stars"
- 2004-2009 Academy of Finland, numerous exchange grants with Russia, Poland, Estonia
- 2005,2010 Magnus Ehrnrooth Foundation grants
- 2003,2007 Väisälä foundation grants, High Energy Astrophysics
- 2006-2008 Academy of Finland, Research grant "High Energy Astrophysics"
- 2005-2006 Academy of Finland, Senior scientist position
- 2003-2005 Nordic Project "High energy astrophysics in the INTEGRAL era", NORDITA, Copenhagen
- 2003-2006 Academy of Finland, Research grant, "High Energy Astrophysics of Black Holes and Gamma-Ray Bursts"

### **Department/University-related service**

- Leader, AstroSpace master program in Astronomy and Space Physics, University of Oulu, 2010-
- Chair of the Astronomy program, University of Oulu, 2004-
- Chair, appointment committee, professorship, University of Oulu, 2009; researcher, University of Oulu, 2009; Senior Assistant position, University of Oulu, 2005
- Member, appointment committee, professorship, Helsinki University of Technology, 2009; Senior Assistant position, University of Oulu, 2003

### **Research-related professional service**

#### Committee memberships, peer-review

- Vice-chairman, Finnish National Committee for Space Research, 2012- (member, 2006- )
- Member, Finnish National Committee for Radio Science, 2012-
- Member of the Council of the European Astronomical Society, 2011-
- Member, Astronomy Working Group, European Space Agency, 2010-2012
- Member, Steering committee, the Finnish Centre for Astronomy with ESO, 2010-
- Chairman, panel on extragalactic objects, INTEGRAL observatory time allocation committee, 2009-2010
- Finnish representative, EU COST Action MP1104, Polarization as a tool to study the Solar System and beyond
- Peer review GLAST gamma-ray observatory, panel member, Dec 2007
- Member, Evaluation committee of the EU Research and Training Network "Gamma-ray bursts: an enigma and a tool", Oct 2004
- Reviewer, European Research Council, 2008; Israel Science Foundation, 2008; Academy of Finland, 2007; Danish Natural Science Research Council, 2006; Austrian Science Fund, 2005
- Director, Finnish Graduate School in Astronomy and Space Physics, 2008-
- Co-leader, Finnish-German researcher training cooperation with DFG graduate school of Univ. of Würzburg
- Member, Nordita Astrophysics committee, 2007-
- Member, Finnish ESO Committee, 2007-
- Member, Board of Tuorla Observatory, Univ. of Turku, 2005-
- Referee for the Astrophysical Journal (13 papers), Astrophysical Journal Letters (11), MNRAS (21), Astronomy & Astrophysics (10), Publ. of Astron. Society of Japan (4), Phys. Rev. Letters (1), New Astronomy (1), Astrophysics and Space Science (1), Phys Rev D (2), Science (1)
- Reviewer, Docent application, K. Nilsson, Univ. of Turku, 2006; S. Mattila, Univ. of Turku, 2009
- Reviewer, Professorship in Astrophysics, University of Tartu, Estonia, 2011
- Reviewer, Professorship in Astronomy, University of Turku, 2011
- Reviewer of PhD theses of C. Villforth, Univ. of Turku, 2011; V.-M. Pelkonen, Univ. of Helsinki, 2009; E. Lindfors, Univ. of Turku, 2007; J. Tammi, Univ. of Turku, 2006; J. Schultz, Univ. of Helsinki, 2005; T. Hackman, Univ. of Helsinki, 2004; E. Olsson, Uppsala Univ., 2004

#### Meetings organization

- Co-organizer of the workshop on Gamma-Ray Burst, Copenhagen, Denmark, 1997
- Co-chairman of SOC, chairman of LOC, international workshop "High Energy Processes in Accreting Black Holes", Gräfvallen, Sweden, 1998
- Co-chairman of SOC, chairman of LOC, international workshop "Gamma-Ray Bursts: The First Three Minutes", Gräfvallen, Sweden, 1999
- SOC member, workshop on "Physics of Accretion and Associated Outflows", NORDITA & TAC, Copenhagen, Denmark, 2000
- Co-chairman of SOC, Symposium "X-ray and Gamma-ray Signatures of Black Holes and Weakly Magnetized Neutron Stars", 33rd COSPAR Scientific Assembly, Warsaw, Poland, 2000
- SOC Member, IAU Symposium 214 "High Energy Processes and Phenomena in Astrophysics", Suzhou, China, 2002
- Co-chairman of SOC, workshop "Light from Black Holes", Kathmandu, Nepal, 2002
- SOC Member, workshop "X-ray polarimetry of astrophysical sources", Stanford University, USA, 2004
- Organizer of the Nordic project meeting in High Energy Astrophysics, Saariselkä, Finland, 2004
- SOC member, COSPAR Colloquium on Spectra & Timing of Accreting X-ray Binaries, Mumbai, India, 2005
- One of the two organizers of the international Thinkshop on "Plasma and photonic modeling of high energy astrophysical shocks", Stockholm, Sweden, 2005
- One of the two organizers of the international workshop on "Quasi-periodic oscillations from compact sources", Copenhagen, Denmark, 2005

- Organizer of the Workshop in High Energy Astrophysics, Levi, Finland, 2005
- SOC member, international workshop "High Energies in the Highlands", Fort William, Scotland, 2005
- Organizer of the astrophysics session at the XL Finnish Physics Days, Tampere, Finland, 2006
- Organizers of the international mini-symposium on Modern Problems in Astrophysics, Oulu, Finland, 2006
- SOC member, international workshop "New Trends in Radiation Hydrodynamics", Stockholm, Sweden, 2007
- Chairman of the SOC, workshop on "Cool discs, hot flows: the varying faces of accreting compact objects", Funäsdalen, Sweden, 2008
- SOC member, international symposium The coming age of X-ray polarimetry, Rome, 2009
- Co-organizer of the international workshop "Physics of relativistic flows", Stockholm, 2009
- Chairman SOC+LOC, XII meeting of Finnish Space Researchers, FinCOSPAR 2009, Rokua, 2009
- SOC member, Ultra-luminous X-ray sources and middle weight black holes, Madrid, Spain, 2010
- SOC member, Accretion and outflow in black hole systems, Kathmandu, Nepal, 2010
- SOC member, 22nd European Cosmic Ray Symposium, Turku, Finland, 2010
- SOC co-chair, Physics of neutron stars, St. Petersburg, Russia, 2011
- SOC member, international symp. Gamma Ray Bursts in the Era of Rapid Follow-up, Liverpool, UK, 2012

#### Network and program organization

- Organizer of the Nordic Network in High Energy Astrophysics financed by Nordita, Denmark, 2003-2005
- Organizer of the program on "Observations and physics of accreting neutron stars" at International Space Science Institute, Bern, Switzerland, 2007-2009
- Organizer of the Nordita program "Physics of relativistic flows", Nordita, Stockholm, May 3 - June 13, 2009

#### Other service

Ballerina, Danish Small Satellite Program, science team theory member, 1999-2001; ESA EXTRA - Experiment for X-ray Timing and Relativistic Astrophysics, science team, member, 2000-2001; ECLAIR, French micro-satellite program, science/theory team, member 2004-2005; Gravitas, science team member, 2010; NHXM, science team member, 2010.

- NASA X-ray Polarimeter GEMS (launch in 2014) Science Working Group, member, 2003–present

#### **Mentoring/ Teaching related service**

##### Teaching (courses given in English; 2001-)

- Stellar structure and evolution, University of Oulu, 2009, 2011
- Radiative Processes in Astrophysics, University of Oulu, 2001, 2004, 2006, 2008, 2011,
- Relativistic (high-energy) astrophysics, University of Oulu, 2002, 2003, 2005, 2008, 2010
- Gasdynamics and the Interstellar Medium, University of Oulu, 2002, 2004, 2007, 2009, 2012
- Theoretical Astrophysics (Stellar atmospheres), University of Oulu, 2003, 2005, 2007, 2010
- Relativistic plasmas, Summer School on Solar and Cosmic Plasmas, Kiljava, Finland, 2005
- High Energy Astrophysics, University of Kyoto, Japan, Jan 2004
- Nordic course in High Energy Astrophysics, Stockholm Observatory, June 2003
- Nordic-Baltic Research school on Astrophysics of Interacting Stars, Lithuania, 2002
- Radiative Processes in Astrophysics, Stockholm Observatory, 2001

##### PhD thesis advisor

Natalia Babkovskaia (PhD 2005, Water-masers in dusty environments of stars and in galactic circumnuclear regions); Jianpeng You (PhD 2007, Period analysis of stellar brightness variations using multichannel photometric observations, co-supervised with H.Salo); Askar Ibragimov (PhD 2009, X-ray emission from compact objects); Indrek Vurm (PhD 2010, Time-dependent modeling of radiative processes in magnetized astrophysical plasmas). In progress: Marja Annala (X-ray pulsars, 2007-); Jari Kajava (Ultra-luminous X-ray sources, 2008-); Alexandra Veledina (X-ray emission from accreting black holes, 2010-)

##### Research advisor of Master theses

Kerttu Viironen, Light curves and polarization of X-ray millisecond pulsars, 2003; Marja Annala, Analysis of light curves from X-ray pulsars, 2007; Jari Kajava, Ultra-luminous X-ray sources, 2007; Alexandra Veledina (St.Petersburg Univ.), Influence of bremsstrahlung on radiation spectra, 2009; Tuulia Pennanen, Gamma-ray burst afterglows, 2011

##### Postdoctoral advisor

Dr. Valery Suleimanov (Neutron star boundary layers, Univ. of Oulu, 2004); Dr. Banibrata Mukhopadhyay (Accretion onto compact objects, Univ. of Oulu, 2003-2004); Dr. Maurizio Falanga (Accretion-powered compact sources in X-ray binaries, CEA Saclay, 2003-2005); Dr. Natalia Babkovskaia (Accretion onto a neutron star, Univ. of Oulu, 2006-2008); Dr. Andrew Gosling (Counterparts of X-ray sources near Galactic

center, Univ. of Oulu, 2008), Alexey Medvedev (Rotation powered pulsars and ultraluminous X-ray sources, FINCA/Univ. of Oulu, Jan 2011-), Sergey Tsygankov (X-ray pulsars, FINCA/Univ. of Oulu, July 2011- )

## Research activities

### Invited talks and seminars

40 invited talks at international conferences and 7 invited colloquia (talks in 2001- are listed below); >20 contributed talks at international conferences and >50 seminars at various institutes after 2001.

### Invited talks (2001-)

- X-rays from Accretion onto Black Holes, Johns Hopkins Univ., Baltimore, 2001
- JENAM 2001, Munich, Germany, 2001
- IAU Symp. 214 High Energy Processes and Phenomena in Astrophysics, Suzhou, China, 2002
- Light from Black Holes, Kathmandu, Nepal, Sept-Oct 2002
- Frascati workshop 2003, Multifrequency Behaviour of High Energy Cosmic Sources, Vulcano, Italy, 2003
- X-ray polarimetry of astrophysical sources, SLAC, Stanford University, USA, 2004
- Finnish Astronomical Society, 2004
- Invited lecture at the NORDITA seminar series, Copenhagen, 2004
- COSPAR Colloquium on Spectra & Timing of Accreting X-ray Binaries, Mumbai, India, 2005
- NORDITA Workdays on QPOs, Copenhagen, 2005
- Workshop "High Energies in the Highlands", Fort William, Scotland, 2005
- High Energy Astrophysics conference, Moscow, 2005
- KIPAC+Dept. of Physics, invited colloquium, Stanford University, 2006
- 36th COSPAR Scientific Assembly, symp. "Different Manifestations of Neutron Stars", Beijing, China, 2006
- XEUS: Visions of the Extreme Universe, XEUS science meeting, Imperial College London, 2007
- New Trends in Radiation Hydrodynamics, Stockholm, Sweden, 2007
- OPTICON HTRA network conference on High Time Resolution Astrophysics, 2007, Edinburgh, Scotland
- High Energy Gamma Rays from Relativistic Outflows, Dublin, Ireland, 2007
- Invited colloquium, Department of Astrophysics, Princeton University, 2008
- Invited colloquium, Dept. Physical Sciences, Univ. of Oulu, 2008
- AGN and Related Fundamental Physics in High Energy Gamma Astronomy, Jerisjärvi, Finland, 2008
- A Decade of Accreting Millisecond X-ray Pulsars, Amsterdam, The Netherlands, 2008
- Invited colloquium, Service d'Astrophysique, CEA Saclay, France, 2008
- Blazar variability across the electromagnetic spectrum, Paris, France, 2008
- Invited lectures, CAMK, Warsaw, Poland, 2008
- Invited colloquium, Racah Inst. of Physics, Hebrew University of Jerusalem, 2008
- The coming age of X-ray polarimetry, Rome, 2009
- Black holes in binary systems: observations versus theory, Ferrara, Italy, 2009
- High-energy phenomena in relativistic outflows II, Buenos Aires, Argentina, 2009
- X-ray bursts and burst oscillations, Leiden, The Netherlands, July 26-30, 2010
- GRAVITAS workshop, Garching, Germany, October 25-26, 2010
- 1<sup>st</sup> NHXM workshop, Valencia, Spain, November 11-12, 2010
- High energy astrophysics 2010, Moscow, December 21-24, 2010
- Fast X-ray timing and spectroscopy at extreme count rates, Champéry, Switzerland, February 7-11, 2011
- Understanding Relativistic Jets, Cracow, Poland, May 22-26, 2011
- JENAM 2011, St. Petersburg, July 4-8, 2011 (two invited talks at SPS1 and S8)
- The Extreme and Variable High Energy Sky, Cagliari, Italy, September 19-23, 2011

Public outreach: Scientific results of my group were described in the ESA's and the University of Oulu press-releases "Star eats companion" in 2005. These results were also described in an article in the Finnish daily newspaper Kaleva and Finnish Astronomy magazine Tähdet ja avaruus # 6/2005. I gave a number of public lectures: about pulsars at Science house in Helsinki in 2006, about pulsars and black holes at amateur astronomy society Arktos, Oulu (in 2006 and 2009), Neutronitähdet at annual meeting of the Finnish universities engineer society, Syötekeskus, June 10, 2010

Publications: About 140 scientific publications, 90 refereed publications. Citation index is about 2500 (ISI) and 3150 (ADS), 30 citations/paper, 8 papers with more than 100 citations. h-index (ISI) = 25, h-index (ADS) = 28; Electronic versions are available at <http://cc.oulu.fi/~jpoutane/publ.html>