

# Curriculum vitae

## 1. Full name and date

Name: **Peter Hilding Johansson**  
Gender: Male  
Date of writing the CV: 03.01.2019

## 2. Date and place of birth

Date and place of birth: 02.05.1978, Kokkola, Finland  
Citizenship: Finnish  
Current address: Department of Physics,  
Gustaf Hällströmin katu 2a  
University of Helsinki, P.O. Box 64,  
FI-00014 Helsinki, Finland  
Phone: +358-9-191-51211  
e-mail: Peter.Johansson@helsinki.fi  
**Homepage:** <http://www.helsinki.fi/~phjohans>

## 3. Education and degrees awarded

- Doctor of Philosophy in Astronomy, Institute of Astronomy, University of Cambridge, degree awarded on 03.10.2006
- Master of Science in Astronomy, Department of Astronomy, University of Helsinki, degree awarded on 14.09.2001
- Bachelor of Science in Astronomy, Department of Astronomy, University of Helsinki, degree awarded on 14.09.2001
- Docent (Habilitation) in Astronomy, Department of Astronomy, University of Helsinki, awarded on 26.10.2009

## 4. Other education and training, qualifications and skills

- Attended the Unilead program for superiors at the University of Helsinki, 2015.
- System administrator of the SGI-Altix 3700 Bx2 supercomputer hosted at the University Observatory Munich, 2007-2010.

## 5. Linguistic skills

Swedish (mother tongue)  
Finnish (mother tongue)  
English (fluent)  
German (fluent)

## 6. Current position

**Professor of Astrophysics** (Astrofysiikan professori), Department of Physics, University of Helsinki, since **01.09.2017**.

## 7. Previous work experience and career breaks

- Associate Professor of Astrophysics (Apulaisprofessori), Department of Physics, University of Helsinki, 01.09.2014-31.08.2017
- Assistant Professor of Astrophysics (Apulaisprofessori), Department of Physics, University of Helsinki, 01.09.2011-31.08.2014
- University Researcher (Yliopistotutkija) at the Finnish Centre for Astronomy with ESO, University of Turku (based at the Department of Physics, University of Helsinki), 01.01.2011-31.08.2011.
- Research Scientist (Senior postdoc) in the Computational Astrophysics Group, University Observatory Munich, Ludwig-Maximilians-Universität (LMU), 01.02.2008-31.12.2010.
- Research Associate (Postdoc) in the Computational Astrophysics Group, University Observatory Munich, Ludwig-Maximilians-Universität (LMU), 01.09.2006-31.01.2008.
- Postgraduate student supervised by Prof. George Efstathiou at the Institute of Astronomy, University of Cambridge, funded by Finnish scholarships, 01.10.2002-31.08.2006.
- Research Assistant, Researcher and Postgraduate student, Department of Astronomy, University of Helsinki, 19 months in total during 01.08.2000-30.09.2002.
- Research Assistant, Metsähovi Radio Observatory, 22.05.2000-31.07.2000.
- Career breaks: Mandatory military service, 15.07.1997-11.03.1998.

## 8. Research funding as well as leadership and supervision

### **Awarded research funding:**

- **Altogether about 3 300 000€ (not corrected for inflation)**
- **European Research Council (ERC) Consolidator Grant 2018** for the project “Post-Newtonian modelling of the dynamics of supermassive black holes in galactic-scale hydrodynamical simulations”  
Funding period 01.07.2019-30.06.2024: 1 953,569€
- Faculty of Science support funding, University of Helsinki:  
Funding period 01.09.2018-31.12.2019: 35,000€
- Ruth och Nils-Erik Stenbäcks Foundation Young investigator grant awarded 28.04.2017 for Theoretical astrophysics research:  
Funding period 01.05.2017-30.04.2019: 20,000€.
- Magnus Ehrnrooth Foundation large grant awarded 28.04.2017 for high impact astronomical research:  
Funding period 01.07.2017-31.12.2019: 100,000€.
- Ruth och Nils-Erik Stenbäcks Foundation Young investigator grant awarded 29.04.2015 for Theoretical extragalactic research:  
Funding period 01.05.2015-30.04.2017: 35,000€.
- Academy of Finland grant awarded 12.06.2014 for the project ”The formation of elliptical galaxies”:  
Funding period 01.09.2014-31.08.2018: 840,068€, of which the Academy of Finland funds 70%.
- Magnus Ehrnrooth Foundation 50th anniversary grant awarded 06.03.2013 for the project ”Supermassive black holes in massive galaxies”:  
Funding period 01.07.2013-31.12.2015: 130,000€.
- Three-year project funding from the research funds of the University of Helsinki awarded 29.11.2011 for the project ”Formation and evolution of galaxies”:  
Funding period 01.01.2012-31.12.2015: 119,000€.
- The Wihuri Foundation scholarship for postgraduate studies at the University

of Cambridge awarded on 09.10.2002 for one year of study: 13.500€.

- The Oskari Huttunen Foundation scholarship for postgraduate studies at the University of Cambridge awarded on 25.09.2002 for three years of study: 57,000€.
- The Magnus Ehrnrooth Foundation scholarship granted by The Finnish Society of Sciences and Letters for postgraduate studies awarded on 06.03.2002 for 6 months of study: 6.250€.
- Väisälä Foundation scholarship granted by The Finnish Academy of Science and Letter for postgraduate studies awarded on 12.12.2001 for one year of study: 14.000€.

#### **Leadership in research work:**

- Head of the Theoretical Extragalactic research group at the University of Helsinki since 01.09.2011. Currently nine members in the group (P.I. + 1 Academy research fellow + 2 postdocs + 3 Ph.D. students + 2 undergraduate students).
- Vice head of the Finnish participation in ESA Euclid space mission since 01.06.2012 (P.I. Dr. Hannu Kurki-Suonio).

#### **Supervision of post-doc researchers:**

- Main supervisor of Pauli Pihajoki, University of Helsinki, 01.02.2015-
- Main supervisor of Till Sawala, University of Helsinki, 01.10.2015-31.08.2017
- Main supervisor of John Regan, University of Helsinki, 01.07.2013-30.09.2015
- Secondary supervisor of Stuart McApline, University of Helsinki, 01.09.2018-

#### **Supervision of post-graduate students:**

- Main supervisor of Matias Mannerkoski, University of Helsinki, 01.05.2018-
- Main supervisor of Natalia Lahén, University of Helsinki, 01.06.2015-
- Main supervisor of Antti Rantala, University of Helsinki, 01.05.2014-
- Main supervisor of Heidi Yli-Kankahila, University of Helsinki, 01.01.2013-31.08.2013
- Secondary supervisor of Clay Hambrick (graduation 2011) and Ena Choi (2013) at the University of Princeton, main supervisor Prof. Jeremiah P. Ostriker.
- Secondary supervisor of Simon Karl (2011), Ludwig Oser (2011) and Rhea-Silvia Remus (2015) at the Ludwig-Maximilians-Universität (LMU), main supervisor Prof. Andreas Burkert.

#### **Officially appointed supervisor:**

- Official supervisor of the Ph.D. thesis of Heidi Yli-Kankahila, Antti Rantala, Natalia Lahén and Matias Mannerkoski (University of Helsinki).
- Official supervisor of the MSc. theses of Heidi Yli-Kankahila, Antti Rantala, Natalia Lahén, Lasse Liljedahl, Matias Mannerkoski and Anni Järvenpää (University of Helsinki).
- Official supervisor of the BSc. theses of Antti Rantala, Lasse Liljedahl, Natalia Lahén, Jussi Aaltonen, Ilana Hiilesmaa, Akke Viitanen, Anni Järvenpää, Antton Luoma, Sanna Damsted, Vili Oja and Kasper Siilin (University of Helsinki).

## **9. Merits in teaching and pedagogical competence**

#### **Involvement in curriculum planning:**

- Vice-head of the Master programme in Particle Physics and Astrophysical Sciences at the Department of Physics, University of Helsinki (01.03.2016-)
- Member of the Board of the Graduate school in Particle Physics and Universe Science at the Department of Physics, University of Helsinki (01.01.2014-)
- Co-ordinator of the Graduate school in Particle Physics and Universe Science at the Department of Physics, University of Helsinki (01.03.2013-31.12.2013)

- Member of the Astronomy teaching council in charge of setting the Astronomy curriculum at the University of Helsinki (01.09.2011-)

#### **Teaching at the University of Helsinki:**

- Introduction to the physical sciences (Fysikaalisten tieteiden esittely & Presentation av de fysikaliska vetenskaperna) basic level, I have given the Astronomy lecture in both Finnish and Swedish (2011-).
- Galaxies and Cosmology (Galaksit ja kosmologia) intermediate level (2011-).
- Elementary course in Astrophysics (Astrofysiikan peruskurssi), intermediate level (2001 and from 2012-).
- Galactic Structure (Linnunradan rakenne), intermediate level (2012-).
- Advanced Dynamics in Astronomy, advanced level (2011-).
- Open Problems in Modern Astrophysics, advanced level (2012-).
- Galaxy formation and evolution, advanced level (2013-).
- Co-organizer of the weekly Astronomy seminar series (2011-).
- Main organizer of the weekly Astro-ph journal club meetings (2011-).

#### **Teaching at the University Observatory Munich (LMU):**

- Supervising students in the Astrophysical Practicals (Astrophysikalisches Praktikum), 4 hours/week (01.09.2006-31.12.2010).
- Supervising students in the the Astrophysical Student seminars (Hauptseminar zur Astrophysik), 2 hours/week. (01.09.2006-31.12.2010).
- Main organizer of weekly group meetings and Astro-ph journal club meetings for the Computational Astrophysics Group, 2 hours/week. (01.09.2006-31.12.2010).

## **10. Honours and awards**

- Fellow of the Swedish Academy of Engineering Sciences in Finland (2016)
- Ruth och Nils-Erik Stenbäcks Foundation Young investigator grant (2017)
- Magnus Ehrnrooth Foundation large grant (2017)
- Ruth och Nils-Erik Stenbäcks Foundation Young investigator grant (2015)
- Magnus Ehrnrooth Foundation 50th anniversary grant (2013)

## **11. Other academic merits**

#### **Pre-examiner or opponent of a doctoral dissertation**

- Pre-examiner of the Ph.D. thesis of Tuomas Kangas, University of Turku (14.03.2017).
- Pre-examiner of the Ph.D. thesis of Pauli Pihajoki, University of Turku (11.04.2014).
- Pre-examiner of the Ph.D. thesis of Heidi Lietzen, University of Turku (25.08.2012).

#### **Evaluation of funding applications and computing time applications**

- Referee for research proposals at the Swedish Research council, ~ 30 proposals per year, (2016, 2017 and 2018).
- Referee for research proposal at the Netherlands Organization for Scientific Research (NWO) (31.05.2010)
- Referee for computing time proposal at the DiRAC supercomputing facility, STFC, United Kingdom (2018).

#### **Membership in national of international expert groups**

- Director of the Kumpula Space Centre (25.4.2014-)
- Member of the Euclid steering board (1.8.2018-)
- Member of the LISA consortium and the astrophysics working group (1.7.2018-)

- Member of the Publication Forum in Finland (1.1.2018-)
- Member of the European Southern Observatory Observing Programmes Committee (OPC) P101-103 (1.10.2017-1.12.2018)
- Head of the Astronomy and Space Physics Division of the Finnish Physical Society (22.3.2011-17.3.2015)
- Panel member on the evaluation board for an Astronomy Professor at the University of Turku. (1.12.2014-12.5.2015)
- Expert secretary (Asiantuntijasihteeri) on the board evaluating the state of Astronomy research in Finland (2012 Academy report, 08/2012).

### **Membership in scientific and scholarly societies**

- Fellow of the Swedish Academy of Engineering Sciences in Finland (23.3.2016-)
- Member of the International Astronomical Union (IAU) (1.9.2009-)
- Fellow of the Royal Astronomical Society (1.6.2011-)
- Member of the Astronomische Gesellschaft (1.1.2011-)
- Member of the Finnish Astronomical Society (1.1.2001-)
- Member of the Finnish Physical Society (Fyysikkoseura) (1.3.2011-)
- Member of the Physical Society in Finland (Fysikersamfundet) (1.6.2011-)

### **Referee for scientific and scholarly journals**

- Science, referee.
- Astrophysical Journal Letters, referee.
- Astrophysical Journal, referee.
- Astrophysical Journal Supplement Series, referee.
- Monthly Notices of the Royal Astronomical Society, referee.
- Monthly Notices of the Royal Astronomical Society Letters, referee.
- Astronomy & Astrophysics, referee.
- Computer Physics Communications, referee.

### **Conference organization**

- Member of the Scientific Organizing Committee for the Finnish Astronomers' Days 2018 (Kuusamo, Finland 28.05-30.05.2018)
- Member of the Scientific Organizing Committee for the Finnish Astronomers' Days 2016 (Tampere, Finland 23.05-25.05.2016)
- Member of the Local Organizing Committee for the Physics Days 2015 conference (Helsinki, Finland, 17.03-19.03.2015)
- Member of the Scientific Organizing Committee for the European Week of Astronomy and Space Science 2013 (Turku, Finland, 08.07-12.07.2013)
- Member of the Scientific Organizing Committee for the Finnish Astronomers' Days 2012 (Haikko, Finland 04.06-06.06.2012)

### **Selected Invited presentations**

- *Simulating the formation of cores in massive galaxies using KETJU*, Ringberg Computational Galaxy Formation Workshop 2018, Garching, Germany (03/2018)
- *Why are there galaxies in the Universe*, Symposium of the Finnish Society of Sciences and Letters, Helsinki, Finland (05/2017)
- *Forming direct collapse black holes in the very early Universe*, MPA-UWC Workshop on Modeling Gas in and Around Galaxies, Stellenbosch, South Africa (11/2016)
- *A regularized Post-Newtonian approach for treating black hole dynamics and their mergers*, Ringberg Computational Galaxy Formation Workshop 2016, Garching, Germany (05/2016)
- *Simulating the formation of early-type galaxies and the dynamics of their supermassive black holes*, George Efsthathiou at 60 symposium: "From Galaxies to Large Scale Structure", Cambridge, United Kingdom (09/2015)

- *Regularized black hole dynamics in Gadget-3*, Virgo Consortium Meeting, Durham, United Kingdom (07/2015).
- *Black hole feedback in galaxy simulation*, The triggering Mechanisms for Active Galactic Nuclei, Lorentz Center, Leiden, Netherlands (07/2013).
- *Assembly histories and observational properties of simulated Early-type galaxies*, EWASS, "Mystery of ellipticals", 2013, Turku, Finland (07/2013).
- *Forming Early-type galaxies in  $\Lambda$ CDM simulations*, Ringberg Galaxy Formation Workshop 2011, Garching, Germany (03/2011).
- *Forming Early-type galaxies in  $\Lambda$ CDM simulations*, Institute of Astronomy Astrophysics seminar, Cambridge, United Kingdom (05/2010).
- *Gravitational heating helps make massive galaxies red and dead*, Thinkshop-Open problems in Galaxy formation, Potsdam, Germany (05/2009).
- *Equal- and unequal-mass mergers of disk and elliptical galaxies with black holes*, 8th Sino-German Workshop, Kunming, China (02/2009).
- *Gravitational Energy Input into Gas in Massive Galaxies*, Santa Cruz Galaxy Workshop 2008, Santa Cruz, USA (08/2008).

## 12. Scientific and societal impact of research

### Nature and scope of publications

- **57 refereed publications+1 submitted publication.**  
(7 1st author + 14 2nd author + 10 3rd author + 26 nth author).
- **Total of 3815 citations** to 57 refereed publications.
- Total of 1597 citations to 20 refereed first and second author publications.
- Total of 510 citations to 7 refereed first author publications.
- **Eight papers** (8,10,14,17,26,31,32,43 in the publication list) **in the top most cited**  $\sim 1\%$  of all refereed astrophysics papers in the corresponding year ( $\lesssim 250$  of  $\sim 25,000$  publications, citation source NASA ADS).
- **h-index: 30**

### Research interests

- Formation and evolution elliptical galaxies, disk galaxies and black holes.
- Modelling the dynamics of supermassive black holes.
- Computational astrophysics – numerical N-Body, SPH simulations.

### Societal impact of research

- Television appearances: About 1-2 TV interview annually on astronomical topics for YLE TV nytt.
- Radio interviews: About 2-3 radio interviews annually on astronomical topics for YLE tiedeykkönen.
- Interviews in printed media: About 3-4 written comments annually.
- About 2-3 popular astronomy talks annually aimed at the general public.

## 13. Societal positions of trust

- Member of the editorial board for the cross-disciplinary Finnish science journal: "Tieteessä tapahtuu" (1.1.2017-)
- Written statement for the "Future committee" of the Finnish Parliament (Eduskunnan tulevaisuusvaliokunta) (9.2.2017)