

RNDr. **Václav Pavlík**, Ph.D.

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\* 18<sup>th</sup> October 1990



## Work experience

- 2019 – now **Astr. Inst. of the Czech Academy of Sciences**, Researcher, [asu.cas.cz](http://asu.cas.cz).  
2018 – now **Planetarium Prague**, Educator & specialist (staff position), [planetum.cz](http://planetum.cz).  
2017 – now **Astr. Inst. of the Czech Academy of Sciences**, Graphic work, [asu.cas.cz](http://asu.cas.cz).  
2012 – now **Czech Astronomy Olympiad**, Co-organizer of the Olympiad, member of category EF since 31<sup>st</sup> October 2012, Board member since 25<sup>th</sup> April 2016, [olympiada.astro.cz](http://olympiada.astro.cz).  
2012 – now **Astropis [Czech astronomical magazine]**, Co-editor, writing about astronomical events and observations, editing and typesetting, [astropis.cz](http://astropis.cz).  
2005 – now **Aventinum [Publishing House]**, Scientific and graphic editing, [aventinum.cz](http://aventinum.cz).  
2017 – 2019 **Astr. Inst. of Charles University**, Part-time researcher, [astro.mff.cuni.cz](http://astro.mff.cuni.cz).  
2009 – 2019 **Tutoring**, Mathematics and Physics (up to university), Chemistry (up to high school).

## Education

- 2014 – 2019 **PhD studies in Theoretical Physics, Astronomy and Astrophysics**, *Astronomical Institute of Charles University*, Prague, Doctoral degree (Ph.D.; 8 ISCED; Sep 6, 2019).  
Thesis: *Perturbed stellar motions in dense star clusters*, advisor: Dr. Ladislav Šubr  
2017 – 2018 **Examen rigorosum**, *Astronomical Institute of Charles University*, Prague, Rerum naturalium doctor (RNDr.; 7 ISCED).  
2012 – 2014 **Graduate studies in Astronomy and Astrophysics**, *Astronomical Institute of Charles University*, Prague, Master's degree (Mgr.; 7 ISCED).  
Thesis: *Modelling the Orion Nebula cluster*, supervisor: Dr. Ladislav Šubr  
2009 – 2012 **Undergraduate studies in Physics**, *Faculty of Mathematics and Physics of Charles University*, Prague, Bachelor's degree (Bc.; 6 ISCED).  
Thesis: *Formation and evolution of dynamical binaries*, supervisor: Dr. Ladislav Šubr  
2003 – 2009 **High school studies in Bilingual French Classes**, *Gymnasium of Jan Neruda*, Prague.  
Baccalaureate from Czech language and literature, French language and literature, Chemistry (*in French*), Mathematics (*in French*) and Physics (*in French and Czech*).  
Primary school study at a multilingual school (1996 – 2003).

## Languages

Czech	<b>Native</b>	
English	<b>Fluent</b>	<i>English exam for Ph.D. students (B2 CEFR), Astr. Inst., 2014</i>
French	<b>Fluent</b>	<i>DALF C1, Ministère Français de L'Éducation Nationale, 2009</i>

## Computer skills

Language	Python, L <sup>A</sup> T <sub>E</sub> X, Bash, HTML, PHP, Awk, C/C++, MPI, Fortran, GNUplot
Software	graphic editing and typesetting (e.g. Adobe Photoshop & InDesign), Office
OS	Linux, Windows

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## Scientific publications

- subm. **Primordial mass segregation of star clusters with primordial binaries**, Pavlík, submitted to *Astronomy & Astrophysics*.
- 2020 **Primordial mass segregation of star clusters: The role of binary stars**, Pavlík, preprint; will be published in *Contributions of the Astr. Obs. Skalnaté Pleso*.  
arXiv: 2001.01450
- 2019 **Do star clusters form in a completely mass-segregated way?**, Pavlík, Kroupa & Šubr, *Astronomy & Astrophysics*, vol. 626, id. A79.  
arXiv: 1905.09289, DOI: 10.1051/0004-6361/201834265
- VizieR Online Data Catalog: ONC stars masses from literature (Pavlik+, 2019)**, Pavlík, Kroupa & Šubr, *VizieR Online Data Catalog*.  
J/A+A/626/A79
- 2018 **A MODEST review**, Varri *et al.*, *Computational Astrophysics and Cosmology*, vol. 5, issue 1, id. 2, pp. 26.  
arXiv:1810.07532, doi:10.1186/s40668-018-0024-6
- The hunt for self similar core collapse**, Pavlík & Šubr, *Astronomy & Astrophysics*, vol. 620, id. A70, pp. 12.  
arXiv:1808.05230, doi:10.1051/0004-6361/201833854
- Neutron stars and millisecond pulsars in star clusters: implications for the diffuse  $\gamma$ -radiation from the Galactic Centre**, Fragione, Pavlík & Banerjee, *MNRAS*, vol. 480, issue 4, pp. 4955–4962.  
arXiv:1804.04856, doi:10.1093/mnras/sty2234
- The black hole retention fraction in star clusters**, Pavlík *et al.*, *Astronomy & Astrophysics*, vol. 617, id. A69, pp. 11.  
arXiv:1806.05192, doi:10.1051/0004-6361/201832919

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## Scientific conferences and lectures

- Jan 2020 **Life of a star cluster**, *invited seminar*, part of the seminar series “Coffee Talk”, Institute for Astronomy, University of Edinburgh.
- Mass segregation and binaries in young star clusters**, *invited seminar*, part of the seminar series “Theory Lunch”, Institute for Astronomy, University of Edinburgh.
- Dec 2019 **Star clusters: primordial mass segregation and binaries**, *oral presentation*, “(M+4)<sup>th</sup> Aarseth N-body Meeting”, Astronomical Institute of Charles University, Prague.
- Sep 2019 **Primordial mass segregation of star clusters: The role of binary stars**, *contributed talk*, Masaryk university, University Centre Telč.
- Aug 2019 **Dynamical evolution of star clusters**, *invited seminar*, Dept. of Physics, University of Pisa, Italy.
- Dec 2018 **Do star clusters form completely mass segregated?**, *oral presentation*, “(M+3)<sup>rd</sup> Aarseth N-body Meeting”, Astronomical Institute of Charles University, Prague.
- Nov 2018 **Cosmic Calcio: Black hole kicks and star clusters**, *invited seminar*, Dept. of Physics, University of Pisa, Italy.
- Jun 2018 **The black hole retention fraction in star clusters**, *oral presentation*, conference “Modest-18”, Fira, Santorini, Greece.
- May 2017 **The black hole retention fraction in star clusters**, *seminar*, Astronomical Institute of Charles University, Prague.
- Dec 2017 **The black hole retention fraction in star clusters**, *oral presentation*, “(M+2)<sup>nd</sup> Aarseth N-body Meeting”, Astronomical Institute of Charles University, Prague.
- Nov 2017 **Core collapse in star clusters**, *invited seminar*, Sapienza, Dept. of Physics, University of Rome, Italy.

- Introduction to N-body methods**, *invited seminar*, Dept. of Physics, University of Pisa, Italy.
- Oct 2017 **Astro-GR 2017**, *workshop and colloquium*, Institute of Space Sciences, Barcelona, Spain.
- Sep 2017 **The black hole retention fraction in star clusters**, *poster*, conference “Modest-17”, Charles University, Prague.  
authors: Pavlík & Jeřábková
- Fitting self-similar core collapse in N-body models**, *oral presentation*, conference “Modest-17”, Charles University, Prague.
- Jan 2017 **Core collapse in N-body clusters**, *seminar*, Astronomical Institute of Charles University, Prague.
- Dec 2016 **Fitting self-similar core collapse to N-body models**, *poster*, conference “Stellar aggregates over mass and spatial scales”, Bad Honnef, Germany.  
authors: Pavlík, Heggie & Šubr

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## Extended visits for work

- Jan 2020 **University of Edinburgh**, *invited by Dr. Anna Lisa Varri*.
- Aug 2019 **University of Pisa**, *invited by prof. Steven N. Shore*.
- Nov 2018 **University of Pisa**, *invited by prof. Steven N. Shore*.
- Nov 2017 **University of Pisa**, *invited by prof. Steven N. Shore*.  
**University of Rome**, *invited by prof. Roberto Capuzzo Dolcetta*.
- Apr 2016 **University of Edinburgh**, *invited as a visiting student by prof. Douglas C. Heggie*.

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## Grants

- 2019 **Workshop for younger students of the Astronomy Olympiad**, *PI of project 0003/7/NAD/2019 within “Giftedness strategy 2020”*, funding from the Czech Ministry of Education, Youth and Sports.
- 2018 **Workshop for younger students of the Astronomy Olympiad**, *PI of project 0043/7/NAD/2018 within “Giftedness strategy 2020”*, funding from the Czech Ministry of Education, Youth and Sports.
- 2016 – 2018 **Perturbed stellar motions in dense star clusters**, *PI of project GAUK-186216*, funding from the Grant Agency of Charles University.

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## Conference organisation

- Nov 2019 **Den s Astropisem [Day with Astropis]**, *LOC chair*, Planetarium Prague.  
(popularisation)
- Dec 2018 **(M+3)-rd Aarseth N-body Meeting**, *LOC*, Astronomical Institute of Charles University, Prague, [astro.mff.cuni.cz/events/aarseth2018](http://astro.mff.cuni.cz/events/aarseth2018).

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## Teaching activities

### Astronomy Olympiad

- 2019 **Problem Booklet 2018/19**, *co-author*, ISBN 978-80-907341-1-1.  
**International Astronomy Olympiad**, *team leader / observer*, Piatra Neamt, Romania.  
Czech student’s awards: 3 Diploma-III  
**Student workshop**, *LOC chair and lecturer*, funded from a grant 0003/7/NAD/2019 of the Czech Ministry of Education, Youth and Sports.
- 2018 **Problem Booklet 2017/18**, *co-author*, ISBN 978-80-907341-0-4.  
**International Astronomy Olympiad**, *team leader*, Colombo, Sri Lanka.  
Czech student’s awards: 1 Diploma-II and 3 Diploma-III  
**Student workshop**, *LOC chair and lecturer*, funded from a grant 0043/7/NAD/2018 of the Czech Ministry of Education, Youth and Sports.

- 2017 **Information and communication technologies in Astronomy Olympiad**, *Kožuško & Pavlík*, in proceedings of “Modern trends in physics teaching” (in Czech), pp 105–107, ISBN 978-80-261-0797-2.  
**Problem Booklet 2016/17**, *co-author*, ISBN 978-80-270-2697-5.  
**International Astronomy Olympiad**, *team leader*, Wei-Hai, China.  
 Czech student’s awards: 1 Diploma-II and 1 Diploma-III  
**2<sup>nd</sup> International Workshop on Astronomy and Astrophysics**, *LOC and lecturer*, Prague.  
**Student workshop**, *LOC chair and lecturer*.
- 2016 **Problem Booklet 2015/16**, *co-author*.  
**International Astronomy Olympiad**, *team leader*, Plovdiv, Bulgaria.  
 Czech student’s awards: 1 Diploma II, 2 Diploma III and Diploma for the best observational round  
**Student workshop**, *LOC chair and lecturer*.
- 2014 – now **astroolymp.sty**, *author and development*, L<sup>A</sup>T<sub>E</sub>X style for typesetting exercises of the Astronomy Olympiad, <https://github.com/pavlikva/astroolymp>.  
[Tutoring](#)
- 2018 – 2019 **MUDRstart**, *lecturer – intensive physics course for students applying to the Faculty of Medicine at Charles University*, Prague.

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## Public lectures

- Feb 2019 **How to retain black holes**, *invited lecture (in Czech)*, Observatory in Rokycany and Plzeň.
- Nov 2018 **Evolution of black holes in star clusters**, *invited lecture (in Czech)*, Den s Astropisem [Day with Astropis], Czech Academy of Sciences, Prague.
- Apr 2018 **Black holes and star clusters**, *invited lecture (in Czech)*, Senec observatory, Slovakia.

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## Popularisation of science

### Albatros Media

- 2019 **Hvězdná obloha [Seeing stars]**, *revision of translation from English to Czech*, Gillingham, ISBN 978-80-2534-310-4.  
[Astropis \(ISSN 1211-0485\) – selection of works](#)
- 2012 – now **Observations of the sky**, *Pavlík & Ondřích*, every regular volume since 2012, pp. 22–25.
- 2019 **Jak vznikají hvězdokupy? [How do star clusters form?]**, *Pavlík*, 4/2019, pp. 30–32.  
**Interview with Nobel prize laureate Rainer Weiss**, *Pavlík*, 3/2019, pp. 15–19.  
**Interview with Nobel prize laureate Kip Thorne**, *Pavlík*, 2/2019, pp. 11–14.
- 2015 **Exoplanets**, *Pavlík*, Special/2015, pp. 22–23.
- 2014 **Special/2014**, *editor in chief*.
- 2012 **Observation of Venus transit**, *Pavlík, Prouza & Ondřích*, Special/2012, pp. 28–33.  
**Asterisms**, *Pavlík*, 1/2012, pp. 20–21.  
[Aventinum – selection of works](#)
- 2019 **Otočná mapa oblohy [Pocket planisphere]**, *revision and update*, Rühl, ISBN 978-80-7151-277-6.  
**Zajatci Marsu [Prisoners of Mars]**, *book cover illustration*, Pokorný, ISBN 978-80-7151-278-3.
- 2018 **Astronomie: 100+1 záludných otázek [Astronomy: 100+1 intriguing questions]**, *Czech manuscript revision*, Mikulášek, Pokorný & Gabzdyl, ISBN 978-80-7442-061-0.
- 2015 **Souhvězdí [Constellations]**, *Czech manuscript revision and update*, Rühl, ISBN 978-80-7442-061-0.

## Planetarium Prague

- 2020 **The Adventures of Rosetta & Philae**, *translation cooperation*, movie.
- 2019 **Night Sky in 8K**, *translation and remake*, full-dome show.
- Horizon**, *translation cooperation*, full-dome show.
- Willy and a Magic Crayon**, *translation from Czech to English*, movie.
- 2018 **Two Little Pieces of Glass**, *translation from English to Czech*, full-dome show.
- Our Violent Planet**, *translation cooperation*, full-dome show.
- Pohyby Země [Movements of the Earth]**, *remake*, full-dome show.
- Mapy cizích světů [Maps of Foreign Worlds]**, *remake*, full-dome show.

## Slovart

- 2018 **Celestial Atlas: A Journey in the Sky through Maps**, *translation from English to Czech*, Percivaldi, ISBN 978-80-7529-642-9.

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## Awards and Honours

- 2019 **Commemorative Diploma**, *for representing the Czech Republic in an international competition in 2019*, from the minister of education, youth and sport, Mr. Robert Plaga.
- 2018 **Commemorative Diploma**, *for representing the Czech Republic in an international competition in 2018*, from the minister of education, youth and sport, Mr. Robert Plaga.
- 2017 **Commemorative Diploma**, *for representing the Czech Republic in an international competition in 2017*, from the minister of education, youth and sport, Mr. Stanislav Štech.
- 2016 **Commemorative Diploma**, *for representing the Czech Republic in an international competition in 2016*, from the minister of education, youth and sport, Mrs. Kateřina Valachová.

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## Other

- 2009 – now **Driver's licence (category B)**, *active driver*.
- 2018 – 2019 **University table tennis club**, *captain of the C-team*, 7<sup>th</sup> class Prague competition.
- 2016 – 2018 **University table tennis club**, *captain of the B-team*, 6<sup>th</sup> class Prague competition.
- 2014 – 2016 **Student representative in the Disciplinary Committee**, *Faculty of Mathematics and Physics of Charles University*.