

## Curriculum vitae - Alena Pravdová

**E-mail:** pravdova@math.cas.cz

**Date and Place of Birth:** October 6, 1971 in Prague, the Czech Republic

**Marital status:** married, two children (born 2002 and 2005)

**Education:**

1995-1999: Charles University, Faculty of Mathematics and Physics, Prague, Ph.D. degree (1999)

1990-1995: Charles University, Faculty of Mathematics and Physics, Prague, Master degree (1995), *Summa cum laude* (1990-1995 average mark: 1,00)

**Professional Appointments:**

1999-now: Researcher at the Institute of Mathematics of the Academy of Sciences of the Czech Republic

**Awards:**

The **Otto Wichterle Award** for young researchers (2004)

**Selected invited lectures:**

- Tromsø, 2018 (invited lecture, 60 min)
- workshop "Models of Gravity", Bremen, 2012 (invited plenary lecture, 60 min)
- 14th Marcell Grossmann Meeting, Stockholm, 2012 (invited talk in a parallel session)
- 19th International Conference on General Relativity and Gravitation, Mexico City, 2010 (invited talk in a parallel session)
- Canadian Mathematical Society Summer Meeting, Halifax, 2004 (invited talk in a parallel session)

**Short research visits:**

Stavanger University (Norway, several visits 2012-2018)

University of Cambridge (UK, 2009, 2012 (2x))

Institute of Mathematics, Utrecht (Netherlands, 2011)

Département de Mathématiques, Faculté des Sciences (Tours, France, 1999)

Max-Planck Institute (Potsdam, Germany, 1997)

**Long research visits:**

Dalhousie University (Halifax, Canada, 3 months in 2002, 3 months in 2003, 2 months in 2004)

University of Texas (Austin, USA, 2001, 5 months)

Friedrich Schiller University (Jena, Germany, 1998, 6 weeks)

**Student supervision:**

Jan Kubíček, Master thesis defended in 2015

Jan Kubíček, Ph.D. student

Martin Kuchynka, Master thesis defended in 2016

Martin Kuchynka, Ph.D. thesis defended 2020

### Scientific projects:

- (2019-2021) Project title: Exact solutions of gravity theories: black holes, radiative spacetimes and electromagnetic fields (Research grant 19-09659S), coordinator: Institute of Mathematics of the Czech Academy of Sciences, the Czech Republic, role: team member
- (2014-2018) Project title: Albert Einstein Center for Gravitation and Astrophysics (GAČR Excellence Project 14-37086G), coordinator: Faculty of Mathematics and Physics, Charles University, the Czech Republic, role: team member
- (2013-2017) Project title: Higher dimensional gravity (Research grant 13-10042S), coordinator: Institute of Mathematics of the Czech Academy of Sciences, the Czech Republic, role: team member
- (2013-2015) Project title: Algebraic classification of tensors on Lorentzian manifolds and its applications (Internal support program for projects of international cooperation M100191201), coordinator: Institute of Mathematics of the Czech Academy of Sciences, the Czech Republic, role: team member
- (2010-2012) Project title: General relativity in higher dimensions (Research grant P203/10/0749), coordinator: Institute of Mathematics of the Czech Academy of Sciences, the Czech Republic, role: team member
- (2007-2009) Project title: Solutions of the Einstein equations in higher dimensions (Junior research grant KJB 10190702), coordinator: Institute of Mathematics of the Czech Academy of Sciences, the Czech Republic, role: principal investigator
- (2004-2006) Project title: Curvature invariants and classification of curvature tensors (Junior research grant KJB 1019403), coordinator: Institute of Mathematics of the Czech Academy of Sciences, the Czech Republic, role: team member
- (2004) Nadace českého literárního fondu, the Czech Republic
- (2002-2004) Natural Sciences and Engineering Research Council of Canada, Canada
- (2000-2003) Project title: Symmetries of asymptotically flat spacetimes and radiation (Post-doctoral research grant 202/00/P031), coordinator: Institute of Mathematics of the Czech Academy of Sciences, the Czech Republic, role: principal investigator

### Commissions of trust:

- Reviewer for the following international scientific journals: Classical and Quantum Gravity, Physical Review Letters, and Physical Review D.
- Appointed reviewer for Ph.D. Theses at the Charles University, Prague

### Publications and citations:

- **55** published papers (38 in international journals, 17 in conference proceedings)
- **38** research papers in international journals
- Web of Science: **45** papers, **963** citations (without self-citations), h-index **18**

- Paper: A. Pravdová, V. Pravda, *Newman-Penrose formalism in higher dimensions: vacuum spacetimes with a non-twisting geodesic multiple Weyl aligned null direction*, *Class. Quant. Grav.* **25** (2008), 235008  
was elected by the Editorial Board of *Class. Quantum Grav.* to one of highlights of the years 2008-2009.
- Paper: V. Pravda, A. Pravdová, M. Ortaggio, *Type D Einstein spacetimes in higher dimensions*, *Class. Quant. Grav.* **24** (2007) 4407-4428  
was elected by the Editorial Board of *Class. Quantum Grav.* to one of highlights of the years 2007-2008.

## List of publications:

Research papers in international journals:

1. J. Bičák, A. Pravdová, *Symmetries of asymptotically flat electrovacuum spacetimes and radiation*, *J. Math. Phys.* **39** 6011-6039 (1998)
2. J. Bičák, A. Pravdová, *Axisymmetric electrovacuum spacetimes with a translational killing vector at null infinity*, *Class. Quantum Grav.* **16** (6), 2023-2041 (1999)
3. A. Pravdová, U. Von der Gonna, *Symmetries of asymptotically flat axisymmetric space-times with null dust*, *J. Math. Phys.* **41** (5), 3035-3044 (2000)
4. V. Pravda, A. Pravdová, *Boost-rotation symmetric spacetimes - review*, *Czech. J. Phys.* **50**, 333 (2000)
5. V. Pravda, A. Pravdová, *Co-accelerated particles in the C-metric*, *Class. Quantum Grav.* **18**, 1205 (2001)
6. A. Pravdová, V. Pravda, *Boost-rotation symmetric vacuum space-times with spinning sources*, *J. Math. Phys.* **43**, 1536 (2002)
7. V. Pravda, A. Pravdová, A. Coley, R. Milson, *All spacetimes with vanishing curvature invariants*, *Class. Quantum Grav.* **19**, 6213 (2002)
8. A. Coley, R. Milson, N. Pelavas, V. Pravda, A. Pravdová, R. Zalaletdinov, *Generalized pp-wave spacetimes in higher dimensions*, *Phys. Rev. D* **67**, 104020 (2003)
9. A. Coley, R. Milson, V. Pravda, A. Pravdová, *Classification of the Weyl Tensor in Higher Dimensions*, *Class. Quantum Grav.* **21**, L35 (2004)
10. V. Pravda, A. Pravdová, A. Coley, R. Milson, *Bianchi identities in higher dimensions*, *Class. Quantum Grav.* **21**, 2873 (2004)
11. A. Coley, R. Milson, V. Pravda, A. Pravdová, *Vanishing Scalar Invariant Spacetimes in Higher Dimensions*, *Class. Quantum Grav.* **21**, 5519 (2004)
12. R. Milson, A. Coley, V. Pravda, A. Pravdová, *Alignment and algebraically special tensors in Lorentzian geometry*, *Int. J. Geom. Meth. Mod. Phys.* **2**, 41 (2005)
13. V. Pravda, A. Pravdová, *WANDs of the Black Ring*, *Gen. Rel. Grav.* **37**, 1277 (2005)
14. N. Pelavas, A. Coley, R. Milson, V. Pravda, A. Pravdová, *VSI<sub>i</sub> spacetimes and the epsilon property*, *J. Math. Phys.* **46**, 063501 (2005)

15. A. Pravdová, V. Pravda, A. Coley, *A note on the peeling theorem in higher dimensions*, Class. Quantum Grav. **22**, 2535 (2005)
16. M. Ortaggio, V. Pravda, A. Pravdová, *Ricci identities in higher dimensions*, Class. Quantum Grav. **24**, 1657 (2007)
17. V. Pravda, A. Pravdová, M. Ortaggio, *Type D Einstein spacetimes in higher dimensions*, Class. Quantum Grav. **24**, 4407 (2007)
18. A. Pravdová, V. Pravda, *Newman-Penrose formalism in higher dimensions: vacuum spacetimes with a non-twisting geodesic multiple Weyl aligned null direction*, Class. Quantum Grav. **25**, 235008 (2008)
19. M. Ortaggio, V. Pravda, A. Pravdová, *Higher dimensional Kerr-Schild spacetimes*, Class. Quantum Grav. **26**, 025008 (2009)
20. M. Ortaggio, V. Pravda, A. Pravdová, *On asymptotically flat algebraically special spacetimes in higher dimensions*, Phys. Rev. D **80**, 084041 (2009)
21. M. Durkee, V. Pravda, A. Pravdová, H. S. Reall, *Generalization of the Geroch-Held-Penrose formalism to higher dimensions*, Class. Quantum Grav. **27**, 215010 (2010)
22. M. Ortaggio, V. Pravda, A. Pravdová, *Type III and N Einstein spacetimes in higher dimensions: general properties*, Phys. Rev. D **82**, 064043 (2010)
23. M. Ortaggio, V. Pravda, A. Pravdová, *On higher dimensional Einstein spacetimes with a warped extra dimension*, Class. Quantum Grav. **28**, 105006 (2011)
24. M. Ortaggio, V. Pravda, A. Pravdová, H. S. Reall, *On a five-dimensional version of the Goldberg-Sachs theorem*, Class. Quantum Grav. **29**, 205002 (2012)
25. M. Ortaggio, V. Pravda, A. Pravdová, *Algebraic classification of higher dimensional spacetimes based on null alignment*, topical review, Class. Quantum Grav., **30**, 013001 (2013)
26. M. Ortaggio, V. Pravda, A. Pravdová, *On the Goldberg-Sachs theorem in higher dimensions in the non-twisting case*, Class. Quantum Grav., **30**, 075016 (2013)
27. S. Hervik, V. Pravda, A. Pravdová, *Type III and N universal spacetimes*, Class. Quantum Grav., **31**, 215005 (2014)
28. M. Ortaggio, A. Pravdová, *Asymptotic behaviour of the Weyl tensor in higher dimensions*, Phys. Rev. D **90**, 104011 (2014)
29. S. Hervik, V. Pravda, A. Pravdová, *Type II universal spacetimes*, Class. Quantum Grav., **32**, 245012 (2015)
30. M. Kuchynka, A. Pravdová, *Spacetimes of Weyl and Ricci type N in higher dimensions*, Class. Quantum Grav. **33**, 115006 (2016)
31. V. Pravda, A. Pravdová, J. Podolský and R. Švarc, *Exact solutions to quadratic gravity*, Phys. Rev. D **95**, 084025 (2017)
32. S. Hervik, V. Pravda, and A. Pravdová, *Universal spacetimes in four dimensions*, arXiv:1707.00264, Journal of High Energy Physics 1710, 28 (2017)
33. M. Kuchynka, A. Pravdová, *Weyl type N solutions with null electromagnetic fields in the Einstein-Maxwell p-form theory*, Gen. Rel. Grav. **49**, 71 (2017)

34. M. Ortaggio, V. Pravda, A. Pravdová, *On higher dimensional Einstein spacetimes with a non-degenerate double Weyl aligned null direction*, *Class. Quantum Grav.* **35**, 075004 (2018)
35. J. Podolský, R. Švarc, V. Pravda, A. Pravdová, *Explicit black hole solutions in higher-derivative gravity*, *Phys. Rev. D* **98**, 021502(R) (2018)
36. R. Švarc, J. Podolský, V. Pravda, A. Pravdová, *Exact black holes in quadratic gravity with any cosmological constant*, *Phys. Rev. Lett.* **121**, 231104 (2018)
37. M. Kuchynka, T. Málek, V. Pravda, A. Pravdová, *Almost universal spacetimes in higher-order gravity theories*, *Phys. Rev. D* **99**, 024043 (2019)
38. J. Podolský, R. Švarc, V. Pravda, A. Pravdová, *Black holes and other exact spherical solutions in quadratic gravity*, *Phys. Rev. D* **101**, 2, 024027 (2020)

Conference proceedings and other research papers:

39. A. Pravdová, *Gravitational radiation and symmetries*, Proceedings of WDS, Charles University, Prague, 383-388 (1998)
40. V. Pravda, A. Pravdová, *Uniformly accelerated sources in electromagnetism and gravity*, Proceedings of WDS, Prague, 377-382 (1998)
41. A. Pravdová, J. Bičák, *Axisymmetric Electrovacuum Spacetimes with an Additional Killing Vector and Radiation*, Proceedings of the 9th Marcel Grossmann Meeting on General Relativity, World Scientific, Roma, 942-943 (2002)
42. V. Pravda, A. Pravdová, *On the spinning C-metric*, in *Gravitation Following the Prague Inspiration. A Volume in Celebration of the 60th Birthday of J. Bičák* (Eds. O. Semerák, J. Podolský and M. Žofka), World Scientific, p. 247 (2002)
43. V. Pravda, A. Pravdová, *On boost-rotation symmetric space-times with (non) spinning sources*, *Int. J. Mod. Phys. A.* **17**, 2771 (2002)
44. A. Pravdová, *VSI&VSI<sub>i</sub> spacetimes in Higher Dimensions*, Proceedings of the 11th Marcel Grossmann Meeting on General Relativity (Eds. Kleinert, H.; Jantzen, R.; Ruffini, R.), Singapore, World Scientific, 1305-1307 (2008)
45. M. Ortaggio, V. Pravda, A. Pravdová, *On Kerr-Schild spacetimes in higher dimensions*, *AIP Conf. Proc.* **1122**, 364 (2009)
46. A. Pravdová, *Algebraic classification of the Weyl tensor*, Proceedings of the International Conference Applications of Mathematics 2012, Prague (Eds. Brandts, J., Chleboun, J., Korotov, S., Segeth, K., Šístek, J., Vejchodský, T.), Institute of Mathematics AS CR, 224-235 (2012)
47. M. Ortaggio, V. Pravda, A. Pravdová, *Newman-Penrose formalism in higher dimensions*, Proceedings of the 12th Marcel Grossmann Meeting on General Relativity (Eds. Damour, T.; Jantzen, R.; Ruffini, R.), Singapore, World Scientific, p. 1955 (2012)
48. M. Ortaggio, V. Pravda, A. Pravdová, *On asymptotically flat algebraically special spacetimes in higher dimensions*, Proceedings of the 12th Marcel Grossmann Meeting on General Relativity (Eds. Damour, T.; Jantzen, R.; Ruffini, R.), Singapore, World Scientific, p. 1958 (2012)

49. M. Ortaggio, V. Pravda, A. Pravdová, H. S. Reall, *On a five-dimensional version of the Goldberg-Sachs theorem*, Proceedings of the conference Relativity and Gravitation, 100 years after Einstein in Prague (Eds. J. Bičák, T. Ledvinka), Springer Proceedings in Physics 157 p. 185 (2014)
50. O. Ortaggio, V. Pravda, A. Pravdová, H. S. Reall, *On the Goldberg-Sachs theorem in five dimensions*, Proceedings of the 13th Marcel Grossmann Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics, and Relativistic Field Theories (Eds. Kjell Rosquist, Robert T Jantzen, Remo Ruffini), Singapore, World Scientific, 1068-1070 (2015)
51. S. Hervik, V. Pravda, A. Pravdová, *Type N universal spacetimes*, Proceedings of the Spanish Relativity Meeting (ERE 2014): almost 100 years after Einstein's revolution, Journal of Physics: Conference Series. Vol. 600, IOP Publishing, Bristol, 012065 (2015)
52. S. Hervik, V. Pravda, A. Pravdová, *Type III and II universal spacetimes*, Proceedings of the Spanish Relativity Meeting (ERE 2014): almost 100 years after Einstein's revolution, Journal of Physics: Conference Series. Vol. 600, IOP Publishing, Bristol, 012066 (2015)
53. M. Ortaggio, A. Pravdová, *Asymptotic properties of gravitational and electromagnetic fields in higher dimensions*, Proceedings of the Spanish Relativity Meeting (ERE 2014): almost 100 years after Einstein's revolution, Journal of Physics: Conference Series. Vol. 600, IOP Publishing, Bristol, 012052 (2015)
54. S. Hervik, V. Pravda, A. Pravdová, *On type N and III universal spacetimes.*, p 1179. Proceedings of the 14th Marcel Grossmann Meeting on General Relativity (Eds. Bianchi, M.; Jantzen, R.; Ruffini, R.), Singapore, World Scientific (2017)
55. S. Hervik, T. Málek, V. Pravda, A. Pravdová, *On type II universal spacetimes.*, p 2542. Proceedings of the 14th Marcel Grossmann Meeting on General Relativity (Eds. Bianchi, M.; Jantzen, R.; Ruffini, R.), Singapore, World Scientific (2017)

#### Papers in Czech

56. T. Málek, V. Pravda, A. Pravdová, *Einsteinovy rovnice a jejich vybrané důsledky*, PMFA **60** (3), 203-2014 (2015)