

CV - Mgr. Vojtěch Pravda, Ph.D., DSc.

Date and Place of Birth: September 2, 1971 in Prague, Czech Republic

Education:

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

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

Professional Appointments:

1999-2018: researcher at the Institute of Mathematics of the Czech Academy of Sciences

2018-now: Research Professor at the Institute of Mathematics of the Czech Academy of Sciences

2014-now: Head of the department of Algebra, Geometry and Mathematical Physics

Awards:

Josef Hlávka Prize (2004)

Publications:

- Author of 43 research papers in international journals.
- In the ISI Web of Science database: 51 publications (including selected conference proceedings contributions), 1046 citations (without self-citations), h-index 20.

Selected invited lectures:

- Canadian Mathematical Society Summer Meeting, Halifax, 2004 (invited talk in a parallel session)
- 12th Marcell Grossmann Meeting, Berlin, 2006 (invited review lecture in a parallel session)
- 13th Marcell Grossmann Meeting, Paris, 2009 (invited review lecture in a parallel session)
- Lecture at DAMTP, Cambridge university, UK, August 2009
- 19th International Conference on General Relativity and Gravitation, Mexico City, 2010 (invited talk in a parallel session)
- 14th Marcell Grossmann Meeting, Stockholm, 2012 (invited talk in a parallel session)
- 21th International Conference on General Relativity and Gravitation, New York, 2016 (invited review lecture in a parallel session)
- Lecture at DAMTP, Cambridge university, UK, October 2016

Research visits:

- Max-Planck Institute (Potsdam, Germany, 1997),
- Friedrich Schiller University (Jena, Germany, 1998),
- University of Texas (Austin, USA, 2001),
- Dalhousie University (Halifax, Canada, 2002, 2003, 2004)
- University of Trento (Italy, 2006),
- Cambridge University (UK, 2009, 2012),
- Institute of Mathematics, Utrecht (Netherlands, 2011),

- Stavanger University (Norway, 2012, 2013, 2014, 2015, 2016, 2017, 2018)

student supervision:

- Matěj Kudrna (Bc. thesis, defended in 2008),
- Petr Ducháček (Master thesis, defended in 2012),
- Tomáš Málek (Ph.D. thesis, defended in 2012, [arXiv:1204.0291](https://arxiv.org/abs/1204.0291)),
- Jan Novák (Ph.D. thesis, defended in 2015),
- Tomáš Tintěra, Ph.D. student

External examiner of Ph.D. theses in theoretical physics at

- MFF UK, Charles University, Prague
- Dept. of Mathematics and Statistics, Dalhousie University, Halifax, Canada
- DAMTP, Cambridge, UK

Other Professional Activities

- (2001-2019) member of the editorial board of *Pokroky matematiky, fyziky a astronomie*
- (2012-2016) member of the supervisory board of the Institute of Mathematics of the Academy of Sciences of the Czech Republic
- (2017-) vice-chair of the board of the Institute of Mathematics of the Academy of Sciences of the Czech Republic
- (2018-) member of the Academy Assembly of the Czech Academy of Sciences

Scientific projects:

- (2019-2021) Project title: Exact solutions of gravity theories: black holes, radiative spacetimes and electromagnetic fields, (Research grant GA19-09659S), role: principal investigator
- (2014-2018) Project title: Albert Einstein Center for Gravitation and Astrophysics (GACR Excellence Project 14-37086G), coordinator: Faculty of Mathematics and Physics, Charles University, the Czech Republic, role: principal co-investigator
- (2013-2017) Project title: Higher dimensional gravity (Research grant 13-10042S), role: principal investigator
- (2013-2015) Project title: Algebraic classification of tensors on Lorentzian manifolds and its applications (Internal support program for projects of international cooperation M100191201), role: principal investigator
- (2010-2012) Project title: General relativity in higher dimensions (Research grant P203/10/0749), role: principal investigator
- (2007-2009) Project title: Solutions of the Einstein equations in higher dimensions (Junior research grant KJB 10190702), role: team member

- (2004-2006) Project title: Curvature invariants and classification of curvature tensors (Junior research grant KJB 1019403), role: principal investigator

List of publications

Research papers in international journals

1. J. Bičák, V. Pravda, *Curvature invariants in type N spacetimes*, Class. Quantum Grav. **15**, 1539 (1998)
2. J. Bičák, V. Pravda, *Spinning C-metric: radiative spacetime with accelerating, rotating black holes*, Phys. Rev. D **60**, 044004 (1999)
3. V. Pravda, *Curvature invariants in type III spacetimes*, Class. Quantum Grav. **16**, 3321 (1999)
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. Quant. Grav. **21**, 2873 (2004)
11. A. Coley, R. Milson, V. Pravda, A. Pravdová, *Vanishing Scalar Invariant Spacetimes in Higher Dimensions*, Class. Quant. 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_i 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. Quant. Grav. **22**, 2535 (2005)
16. V. Pravda, O. B. Zaslavskii, *Curvature tensors on distorted Killing horizons and their algebraic classification*, Class. Quant. Grav. **22**, 5053 (2005)
17. M. Ortaggio, V. Pravda, *Black rings with a small electric charge: gyromagnetic ratios and algebraic alignment*, J. High Energy Phys. 0612, 054 (2006)

18. M. Ortaggio, V. Pravda, A. Pravdová, *Ricci identities in higher dimensions*, Class. Quant. Grav. **24**, 1657 (2007)
19. V. Pravda, A. Pravdová, M. Ortaggio, *Type D Einstein spacetimes in higher dimensions*, Class. Quant. Grav. **24**, 4407 (2007)
20. A. Pravdová, V. Pravda, *Newman-Penrose formalism in higher dimensions: vacuum spacetimes with a non-twisting geodetic multiple Weyl aligned null direction*, Class. Quant. Grav. **25**, 235008 (2008)
21. M. Ortaggio, V. Pravda, A. Pravdová, *Higher dimensional Kerr-Schild spacetimes*, Class. Quant. Grav. **26**, 025008 (2009)
22. M. Ortaggio, V. Pravda, A. Pravdová, *On asymptotically flat algebraically special spacetimes in higher dimensions*, Phys. Rev. D **80**, 084041 (2009)
23. M. Durkee, V. Pravda, A. Pravdová, H. S. Reall, *Generalization of the Geroch-Held-Penrose formalism to higher dimensions*, Class. Quant. Grav. **27**, 215010 (2010)
24. M. Ortaggio, V. Pravda, A. Pravdová, *Type III and N Einstein spacetimes in higher dimensions: general properties*, Phys. Rev. D **82**, 064043 (2010)
25. T. Málek, V. Pravda, *Kerr-Schild spacetimes with (A)dS background*, Class. Quant. Grav. **28**, 125011 (2011);
26. M. Ortaggio, V. Pravda, A. Pravdová, *On higher dimensional Einstein spacetimes with a warped extra dimension*, Class. Quant. Grav. **28**, 105006 (2011)
27. T. Málek, V. Pravda, *Type III and N solutions to quadratic gravity*, Phys. Rev. D **84**, 024047 (2011)
28. 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)
29. M. Ortaggio, V. Pravda, A. Pravdová, *Algebraic classification of higher dimensional spacetimes based on null alignment*, topical review, Class. Quantum Grav. **30**, 013001 (2013)
30. 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)
31. S. Hervik, V. Pravda, and A. Pravdová, *Type III and N universal spacetimes*, Class. Quantum Grav. **31**, 215005 (2014)
32. S. Hervik, T. Málek, V. Pravda, and A. Pravdová, *Type II universal spacetimes*, Class. Quant. Grav. **32**, 245012 (2015)
33. M. Ortaggio, V. Pravda, *Electromagnetic fields with vanishing scalar invariants*, Class. Quantum Grav. **33**, 115010 (2016)
34. V. Pravda, A. Pravdová, J. Podolský and R. Švarc, *Exact solutions to quadratic gravity*, Phys. Rev. D **95**, 084025 (2017)
35. S. Hervik, V. Pravda, and A. Pravdová, *Universal spacetimes in four dimensions*, Journal of High Energy Physics, 1710, 28 (2017)
36. M. Ortaggio, V. Pravda, *Electromagnetic fields with vanishing quantum corrections*, Phys.Lett. B779, 393 (2018)

37. M. Ortaggio, V. Pravda, A. Pravdová, *On higher dimensional Einstein spacetimes with a non-degenerate double Weyl aligned null direction*, Class. Quantum Grav. 35 (2018) 075004
38. S. Hervik, M. Ortaggio, V. Pravda, *Universal electromagnetic fields*, Class. Quantum Grav. 35 (2018) 175017
39. J. Podolský and R. Švarc, V. Pravda, A. Pravdová, *Explicit black hole solutions in higher-derivative gravity*, Phys. Rev. D **98**, 021502 (2018)
40. R. Švarc, J. Podolský, V. Pravda, A. Pravdová, *Exact black holes in quadratic gravity with any cosmological constant*, Phys. Rev. Lett. **121**, 231104 (2018)
41. M. Kuchynka, T. Málek, V. Pravda, A. Pravdová, *Almost universal spacetimes in higher-order gravity theories*, Phys. Rev. D **99**, 024043 (2019)
42. J. Podolský and R. Švarc, V. Pravda, A. Pravdová, *Black holes and other exact spherical solutions in Quadratic Gravity*, Phys. Rev. D **101**, 024027 (2020)
43. V. Pravda, A. Pravdová, J. Podolský and R. Švarc, *Black holes and other spherical solutions in quadratic gravity with a cosmological constant*, Phys. Rev. D (2021), accepted

conference proceedings and other research papers

44. V. Pravda, A. Pravdová, *Uniformly accelerated sources in electromagnetism and gravity*, Proceedings of WDS, Prague (1998)
45. 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)
46. V. Pravda, A. Pravdová, *On boost-rotation symmetric space-times with (non) spinning sources*, Int. J. Mod. Phys. A. **17**, 2771 (2002)
47. V. Pravda, J. Bičák, *Curvature Invariants in Algebraically Special Spacetimes*, Proceedings of 9th Marcel Grossmann Meeting on General Relativity (Eds. V.G. Gurzadyan, R.T. Jantzen, R. Ruffini), p. 864, Scientific World (2002)
48. V. Pravda, *On the algebraic classification of spacetimes*, J. Phys. Conf. Ser. **33**, 463 (2006)
49. V. Pravda, *On the classification of the Weyl tensor in higher dimensions*, AIP Conf. Proc. **861**, 450 (2006)
50. V. Pravda, O.B. Zaslavskii, *Distorted Killing Horizons and Algebraic Classification of Curvature Tensors*, Proceedings of the 11th Marcel Grossmann Meeting on General Relativity (Eds. Kleinert, H.; Jantzen, R.; Ruffini, R.), p. 2231, Singapore, World Scientific, (2008)
51. V. Pravda, *Classification of the Weyl tensor in higher dimensions and its applications*, Proceedings of the 11th Marcel Grossmann Meeting on General Relativity (Eds. Kleinert, H.; Jantzen, R.; Ruffini, R.), p. 1323, Singapore, World Scientific (2008)
52. M. Ortaggio, V. Pravda, A. Pravdová, *On Kerr-Schild spacetimes in higher dimensions*, AIP Conf. Proc. **1122**, 364 (2009)
53. T. Málek, V. Pravda, *Higher dimensional Kerr-Schild spacetimes with (A)dS background*, J. Phys. Conf. Ser. **314**, 012111 (2011)

54. V. Pravda, *Algebraic classification of the Weyl tensor : selected applications*, in Proceedings of the International Conference Applications of Mathematics 2012. Prague (Eds. Brandts, J., Chleboun, J., Korotov, S., Segeth, K., Šístek, J., Vejchodský, T.), p. 214, Institute of Mathematics AS CR (2012)
55. 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.), p. 1955. Singapore, World Scientific (2012)
56. 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.), p. 1958. Singapore, World Scientific (2012)
57. 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, B. Schutz), Springer (2014)
58. S. Hervik, V. Pravda, A. Pravdová, *Type N universal spacetimes*. J. Phys. Conf. Ser. **600**, 012065 (2015)
59. S. Hervik, V. Pravda, A. Pravdová, *Type III and II universal spacetimes*. J. Phys. Conf. Ser. **600**, 012066 (2015)
60. T. Málek, V. Pravda, *Higher dimensional type N and III solutions of Einstein gravity and quadratic gravity*. Proceedings of the 13th Marcel Grossmann Meeting on General Relativity (Eds. Rosquist, K.; Jantzen, R.; Ruffini, R.), p 1071. Singapore, World Scientific (2015)
61. M. Ortaggio, V. Pravda, A. Pravdová, H. S. Reall, *On the Goldberg-Sachs theorem in five dimensions*, Proceedings of the 13th Marcel Grossmann Meeting on General Relativity (Eds. Rosquist, K.; Jantzen, R.; Ruffini, R.), p 1068. Singapore, World Scientific (2015)
62. M. Ortaggio, V. Pravda, *VSI electromagnetic fields*, Proceedings of the 14th Marcel Grossmann Meeting on General Relativity (Eds. Bianchi, M.; Jantzen, R.; Ruffini, R.), p 2565. Singapore, World Scientific (2017)
63. 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)
64. 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

65. V. Pravda, *Spinory v teorii relativity*, PMFA **45**, 284 (2000)
66. V. Pravda, *Maticové Lieovy grupy a Lieovy algebry*, PMFA **52**, 219 (2007)
67. O. Kowalski, M. Křížek, V. Pravda, *Nejsymetričtější variety*, PMFA **59**, 135 (2014)
68. T. Málek, V. Pravda, A. Pravdová, *Einsteinovy rovnice a jejich vybrané důsledky*, PMFA **60**, 203 (2015)
69. M. Ortaggio, V. Pravda, *Abelovu cenu za rok 2019 získala Karen Uhlenbecková*, PMFA (2021), accepted