

Curriculum vitae

Person Identification

- Prof. RNDr. Jan Slovak, DrSc
born July 16, 1960, in Berlin
married, 2 children

Workplace

- Faculty of Science
Department of Mathematics and Statistics
Kotlářská 2
611 37 Brno
Czech Republic

Employment Position

- Professor of Mathematics - Geometry

Education and Academic Qualifications

- 1979-1983 study of mathematics at the Masaryk University in Brno
- 1990 the CSc degree (PhD), the thesis devoted to bundle functors on fibered manifolds
- 1994 the habilitation (dissertation devoted to natural operators on conformal Riemannian manifolds)
- 1997 the 'Doctor of Science' degree DrSc, dissertation devoted to Parabolic Geometries
- 2001 professorship appointment, Mathematics-Geometry, Faculty of Science, Masaryk university in Brno

Employment Summary

- 1983-1991 Research Fellow at the Mathematical Institute of the Czechoslovak Academy of Sciences, branch Brno
- 1991-1992 Visiting Professor at the University of Vienna
- since 1992 Assistant Professor, Associated Professor, Professor, Masaryk University, Brno
- 8/96-7/97 Australian Research Council Senior Research Fellow, University of Adelaide, South Australia
- 7/2015-6/2023 Director of the Department of Mathematics and Statistics

Pedagogical Activities

- Linear algebra and geometry, differential geometry, computational geometry, computational commutative algebra, Lie groups and Lie algebra, representation theory, servis Maths teaching
- MSc. Thesis supervised in differential geometry, representation theory, CAM systems, continuous econometric models
- PhD. Thesis supervised in Geometric Analysis (including computational and algebraic aspects and applications)

Scientific and Research Activities

- The main area of research is differential geometry and geometric analysis. The most important contributions deal with analytical aspects of the theory of natural operators, classification of operators of certain types, and applications of representational techniques in differential geometry. At present, Jan Slovak is mainly interested in all questions concerning prospective applications of Cartan geometries (e.g. the so-called parabolic geometries) in Information Geometry and Geometry of Deep Learning, as well as the relations to the representation theory of Lie groups and Lie algebras, Algebraic Topology and Geometry.

Academical Stays

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- 1994 -- ESI, Austria, 2 months
- 1995 -- Adelaide, Australia, 1 month
- 2003, 2011, 2013, 2014, 2015, 2016, 2017 -- Adelaide, Canberra Australia, 1 month each
- 2005, 2008, 2017 -- Auckland, New Zealand, 1 month each

University Activities

- 1998-1999 Vice-dean, Faculty of Informatics
- 2/2000-1/2003 Dean of Faculty of Science
- 3/2004-11/2005 Vice-rector for Strategy and Development
- Member of the Scientific Councils of the Faculty of Informatics (since 1998), Faculty of Science (since 2000), and Masaryk University (since 2000)
- Director of the Technology Transfer Office (2006-2012, with a short break)
- Director of the Department of Mathematics and Statistics (2015-2023)

Extrauniversity Activities

- Member of the European Mathematical Society, Member of the American Mathematical Society, Member of the Union of Czech Mathematicians and Physicists

Appreciation of Science Community

- European Mathematical Society Council Delegate (1998 -- 2002) and member of the Electronic Publication Committee of EMS (until 2004)
- Member or Chairman of the Organizing Committees of numerous international conferences (chairman of Winter School Geometry and Physics, 1995, 1998, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, 2021, 2022) chairman of Differential Geometry and Applications, Brno, 1998, 2010, 2013, 2016 for example)
- Invited lectures include the universities in: Adelaide, Arhus, Armidale, Auckland, Banff, Bergen, Berlin, Bonn, Brasov, Brisbane, Brussel, Cambridge, Canberra, Clausthal, Coimbra, College Station, Cracow, Darmstadt, Dortmund, Edinburgh, Fayetteville, Kyoto, Iowa City, Lecce, Leipzig, Liege, Lublin, Luminy, Madrid, Marburg, Melbourne, Moscow, Minneapolis, Mumbai, Norman, Oxford, Palo Alto, Paris, Porto, Potsdam, San Diego, Seoul, Singapore, Sofia, Sorrento, Stockholm, Tokyo, Tomsk, Torino, Trieste, Tromso, Vienna, Warsaw, Woolgong
- Member of the Board of Trustees of the CESNET development fund (till 2013)
- Editor in Chief of Differential Geometry and Applications (Elsevier), member of the Editorial Board of CMUC (Charles University, Prague), and Archivum Mathematicum (Masaryk University, Brno)
- Award by 'Český Literární fond' for scientific work in 1985
Award by the rector of MU for scientific work in 1994
Award by the rector of MU for scientific work in 2010

Selected Publications

- GOVER, A. Rod a Jan SLOVÁK. Non-holonomic equations for the normal extremals in geometric control theory. *Journal of Geometry and Physics*. Elsevier, 2022, roč. 171, January, s. 104395-104408. ISSN 0393-0440. doi:10.1016/j.geomphys.2021.104395. [URL info](#)
- BIHONEGN, Temesgen Tsegaye, Sumit KAUSHIK, Avinash BANSAL, Lubomír VOJTÍŠEK a Jan SLOVÁK. Geodesic fiber tracking in white matter using activation function. *Computer Methods and Programs in Biomedicine*. Elsevier, 2021, roč. 208, September, s. "106283", 14 s. ISSN 0169-2607. doi:10.1016/j.cmpb.2021.106283. [URL info](#)
- ALEKSEEVSKIY, Dmitry, Alexandr MEDVEDEV a Jan SLOVÁK. Constant curvature models in sub-Riemannian geometry. *Journal of Geometry and Physics*. Amsterdam: Elsevier Science BV, 2019, roč. 138, April, s. 241-256. ISSN 0393-0440. doi:10.1016/j.geomphys.2018.09.013. [Full Text info](#)

- EASTWOOD, Michael George a Jan SLOVÁK. Conformally Fedosov manifolds. *Advances in Mathematics*. San Diego: ACADEMIC PRESS INC ELSEVIER SCIENCE, 2019, roč. 349, JUN 20 2019, s. 839-868. ISSN 0001-8708. doi:10.1016/j.aim.2019.04.004. [URL info](#)
- KUSHNER, Alexei, Valentin V. LYCHAGIN a Jan SLOVÁK. Lectures on Geometry of Monge–Ampere Equations with Maple. In R. Kycia et al. *Nonlinear PDEs, Their Geometry, and Applications*. Basel: Springer Nature, Birkhäuser, 2019. s. 53-94. ISBN 978-3-030-17030-1. doi:10.1007/978-3-030-17031-8_2. [URL info](#)
- MINCHEV, Ivan Minchev a Jan SLOVÁK. On the equivalence of quaternionic contact structures. *Annals of Global Analysis and Geometry*. Springer, 2018, roč. 53, č. 3, s. 331-375. ISSN 0232-704X. doi:10.1007/s10455-017-9580-2. [URL info](#)
- SLOVÁK, Jan. Individualized on-line Education in STEM. In Miroslav Hrubý. *Distance Learning, Simulation and Communication*. Brno: University of Defence, 2015. s. 120-126. ISBN 978-80-7231-992-3. [info](#)
- GIBSON, David a Jan SLOVÁK. *Building Sustainable R&D Centers in Emerging Technology Regions*. 1., elektronické vyd. Brno: Masarykova univerzita, 2015. 240 s. ISBN 978-80-210-7855-0. doi:10.5817/CZ.MUNI.P210-7855-2015. [Čítárna Munispace info](#)
- SLOVÁK, Jan a Gerd SCHMALZ. Free CR distributions. *Central European Journal of Mathematics*. 2012, roč. 10, č. 5, s. 1896-1913. ISSN 1895-1074. doi:10.2478/s11533-012-0090-y. [info](#)
- DOUBROV, Boris a Jan SLOVÁK. Inclusions between parabolic geometries. *Pure and Applied Mathematics Quarterly*. Boston: Int. Press, 2010, roč. 6, č. 3, s. 755-780. ISSN 1558-8599. [info](#)
- SLOVÁK, Jan a Andreas CAP. *Parabolic Geometries I, Background and General Theory*. první. Providence, RI, USA: American Mathematical Society, 2009. 628 s. Mathematical Surveys and Monographs, 154. ISBN 978-0-8218-2681-2. [URL info](#)
- ČAP, Andreas, Jan SLOVÁK a Vojtěch ŽÁDNÍK. On distinguished curves in parabolic geometries. *Transformation Groups*. Boston: Birkhauser, 2004, roč. 9, č. 2, s. 143-166. ISSN 1083-4362. [URL info](#)
- SLOVÁK, Jan a Andreas CAP. Weyl structures for parabolic geometries. *Mathematica Scandinavica*. Aarhus: Aarhus Universitet, 2003, roč. 93, č. 1, s. 53-90. ISSN 0025-5521. [info](#)
- SLOVÁK, Jan, Andreas CAP a Vladimír SOUČEK. Bernstein-Gelfand-Gelfand sequences. *Annals of Mathematics*. Princeton University: The Johns Hopkins University Press, 2001, roč. 154, č. 1, s. 97-113. ISSN 0003-486X. [info](#)
- SLOVÁK, Jan, Andreas CAP a Vladimír SOUČEK. Invariant operators on manifolds with almost Hermitian symmetric structures, III. Standard operators. *Differential Geometry and its Applications*. Amsterdam: Elsevier Science, 2000, roč. 12, č. 1, s. 51-84. ISSN 0926-2245. [info](#)
- SLOVÁK, Jan a Gerd SCHMALZ. The geometry of hyperbolic and elliptic CR-manifolds of codimension two. *The Asian Journal of Mathematics*. Boston: International Press, 2000, roč. 4, č. 3, s. 565-598. ISSN 1093-6106. [info](#)
- SLOVÁK, Jan a Vladimír SOUČEK. First order invariant differential operators for parabolic geometries. In *Seminaires & Congres*. France: French Math. Soc., 2000. s. 249-273. ISBN 2-85629-094-9. [info](#)
- SLOVÁK, Jan a A.R. GOVER. Invariant local twistor calculus for quaternionic structures and related geometries. *Journal of Geometry and Physics*. Amsterdam: Elsevier Science, 1999, roč. 32, č. 1, s. 14-56. ISSN 0393-0440. [info](#)
- SLOVÁK, Jan a Michael G. EASTWOOD. Semiholonomic Verma modules. *Journal of Algebra*. 1997, roč. 197, č. 2, s. 424-448. ISSN 0021-8693. [info](#)
- SLOVÁK, Jan, Andreas CAP a Vladimír SOUČEK. Invariant operators on structures with almost Hermitian symmetric structures. I. Invariant differentiation. *Acta Math. Univ. Comeniana*. 1997, roč. 66, č. 1, s. 33-69. ISSN 0862-9544. [info](#)
- SLOVÁK, Jan, Andreas CAP a Vladimír SOUČEK. Invariant operators on structures with almost Hermitian symmetric structures. II. Normal Cartan connections. *Acta Math. Univ. Comeniana*. 1997, roč. 66, č. 2, s. 203-220. ISSN 0862-9544. [info](#)
- KOLÁŘ, Ivan, Jan SLOVÁK a Peter W. MICHOR. *Natural Operations in Differential Geometry*. Berlin-Heidelberg-New York: Springer-Verlag, 1993. 434 s. ISBN 3-540-56235-4. [info](#)
- SLOVÁK, Jan. On invariant operations on a manifolds with connection or metric. *Journal of Differential Geometry*. 1993, roč. 36, č. 1, s. 633-650. ISSN 0022-040X. [info](#)

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