# Biographical Sketch: Peter Šemrl

## 1 Professional preparation

- University of Ljubljana, B.Sc., 1985
- University of Ljubljana, M.Sc., 1987
- University of Ljubljana, Ph.D., 1988

## 2 Appointments

- Department of Mathematics, University of Ljubljana: Assistant Professor, 1988–1993
- Faculty of Engineering, University of Maribor: Assistant Professor, 1993–1994; Associate Professor, 1994–1998
- Department of Mathematics, University of Ljubljana: Associate Professor, 1988–2000; Professor, 2000–2022
- Institute of Mathematics, Physics, and Mechanics, Director, 2022–

## 3 Prizes

- National award for scientific achievments, Slovenia, 1996
- Taussky-Todd lecture, 11th ILAS Conference, Coimbra, Portugal, 2004
- Béla Szökefalvy-Nagy Medal, 2018

## 4 Selected professional activities

- Editor-in-Chief of Linear Algebra and Its Applications (jointly with Richard Brualdi and Volker Mehrmann)
- Member of editorial boards: Acta Scientiarum Mathematicarum. Until 2022: Linear and Multilinear Algebra, Operators and Matrices.
- President of International Linear Algebra Society, 2014–2020

- International Linear Algebra Society: Chair of ILAS Nominating Committee, 2007, 2022; Member of ILAS Advisory Committee, 2008–2011; Member of ILAS Board of Directors, 2012-2014; Member of ILAS Journals Committee, 2020–2023
- Member of the committee for the Hans Schneider Prize in Linear Algebra, 2011/12
- Co-director (jointly with Rajendra Bhatia) of Advanced School and Workshop on Matrix Geometries and Applications, ICTP, Trieste, Italy, July 2013
- Scientific Committee, CIMPA Research school on Operator Theory and the Principles of Quantum Mechanics, Meknes, Morocco, 2014.
- Member of EMS European Solidarity Committee, 2019-2022
- Ph.D. students: Tatjana Petek, 1999; Gregor Dolinar, 2000; Ajda Fošner, 2005; Lucijan Plevnik, 2014

# 5 Areas of research

- Linear Algebra, Operator Theory, Algebra, Geometry, Functional Analysis, Mathematical Physics.

# 6 Selected publications

- 183 journal publications, Citations: According to MathSciNet Peter Šemrl's papers have been cited 3539 times by 1194 authors.
- Ring derivations on standard operator algebras, *J. Funct. Anal.* **112** (1993), 318-324.
- with M. Brešar, Mappings which preserve idempotents, local automorphisms, and local derivations, *Canad. J. Math.* **45** (1993), 483-496.
- with M. Omladič, On non linear perturbations of isometries, *Math. Ann.* **303** (1995), 617-628.
- with M. Brešar, Derivations mapping into the socle, *Math. Proc. Camb. Phil. Soc.* **120** (1996), 339-346.
- Linear mappings that preserve operators annihilated by a polynomial, *J. Operator Theory* **36** (1996), 45-58.
- with M. Brešar, Linear maps preserving the spectral radius, *J. Funct. Anal.* **142** (1996), 360-368.
- with R. Bhatia, Approximate isometries on Euclidean spaces, *Amer. Math. Monthly* **104** (1997), 497-504.

- Local automorphisms and derivations on $\mathcal{B}(H)$, *Proc. Amer. Math. Soc.* **125** (1997), 2677-2680.
- Spectrally bounded linear maps on $B(H)$, *Quart. J. Math. Oxford* **49** (1998), 87-92.
- with M. Brešar, Invertibility preserving maps preserve idempotents, *Michigan Math. J.* **45** (1998), 483-488.
- Non linear perturbations of homomorphisms on $C(X)$, *Quart. J. Math. Oxford* **50** (1999), 87-109.
- with M. Brešar, On locally linearly dependent operators and derivations, *Trans. Amer. Math. Soc.* **351** (1999), 1257-1275.
- with M. Brešar, Elementary operators, *Proc. Roy. Soc. Edinburgh Sect. A.* **129** (1999), 1115-1135.
- with M. Omladič and H. Radjavi, Preserving commutativity, *J. Pure Appl. Algebra* **156** (2001), 309-328.
- with R. Meshulam, Locally linearly dependent operators, *Pacific J. Math.* **203** (2002), 441-459.
- with T. Petek, Adjacency preserving maps on matrices and operators, *Proc. Roy. Soc. Edinburgh Sect. A.* **132** (2002), 661-684.
- with J. Väisälä, Nonsurjective nearisometries of Banach spaces, *J. Funct. Anal.* **198** (2003), 268-278.
- Generalized symmetry transformations on quaternionic indefinite inner product spaces: An extension of quaternionic version of Wigner's theorem, *Comm. Math. Phys.* **242** (2003), 579-584.
- Hua's fundamental theorem of the geometry of matrices, *J. Algebra* **272** (2004), 801-837.
- Applying projective geometry to transformations on rank one idempotents, *J. Funct. Anal.* **210** (2004), 248-257.
- with M. Brešar, Commutativity preserving linear maps on central simple algebras, *J. Algebra* **284** (2005), 102-110.
- with L. Molnár, Nonlinear commutativity preserving maps on self-adjoint operators, *Quart. J. Math. Oxford* **56** (2005), 589-595.
- Maps on idempotent matrices over division rings, *J. Algebra* **298** (2006), 142-187.
- with M. Brešar, On bilinear maps on matrices with applications to commutativity preservers, *J. Algebra* **301** (2006), 803-837.
- Non-linear commutativity preserving maps on hermitian matrices, *Proc. Roy. Soc. Edinburgh Sect. A.* **138** (2008), 157-168.
- Endomorphisms of matrix semigroups over division rings, *Israel J. Math.* **163** (2008), 125-138.

- with W.-l. Huang, Adjacency preserving maps on hermitian matrices, *Canad. J. Math.* **60** (2008), 1050-1066.
- with L. Rodman, A localization technique for linear preserver problems, *Linear Algebra Appl.* **433** (2010), 2257-2268.
- with M. Brešar and Špela Špenko, On locally complex algebras and low-dimensional Cayley-Dickson algebras, *J. Algebra* **327** (2011), 107-125.
- Comparability preserving maps on Hilbert space effect algebras, *Comm. Math. Phys.* **313** (2012), 375-384.
- Symmetries on bounded observables - a unified approach based on adjacency preserving maps, *Integral Equations Operator Theory* **72** (2012), 7-66.
- Symmetries of Hilbert space effect algebras, *J. Lond. Math. Soc.* **88** (2013), 417-436.
- The optimal version of Hua's fundamental theorem of geometry of rectangular matrices, *Mem. Amer. Math. Soc.* **232** (2014), 74pp.
- Invertibility preservers on central simple algebras, *J. Algebra* **408** (2014), 42-60.
- Automorphisms of Hilbert space effect algebras, *J. Phys. A* **48** (2015), 195301 (18pp).
- with C. de Seguins Pazzis, Hua's fundamental theorem of geometry of rectangular matrices over EAS division rings, *J. Algebra* **439** (2015), 159-187.
- with G.P. Gehér, Isometries of Grassmann spaces, *J. Funct. Anal.* **270** (2016), 1585-1601.
- Order isomorphisms of operator intervals, *Integral Equations Operator Theory* **89** (2017), 1-42.
- Order and spectrum preserving maps on positive operators, *Canad. J. Math.* **69** (2017), 1422-1435.
- with G.P. Gehér, Isometries of Grassmann spaces, II, *Adv. Math.* **332** (2018), 287-310.
- with G.P. Gehér, Coexistency on Hilbert space effect algebras and a characterisation of its symmetry transformations, *Comm. Math. Phys.* **379** (2020), 1077-1112.
- with M. Mori, Continuous coexistency preservers on effect algebras, *J. Phys. A* **54** (2021), 015303, 17pp.
- Step-isometries, *J. Funct. Anal.* **280** (2021), 108961, 26pp.
- Wigner symmetries and Gleason's theorem, *J. Phys. A* **54** (2021), 315301, 6pp.
- with M. Brešar, The Waring problem for matrix algebras, *Israel J. Math.* **253** (2023), 381-405.
- with M. Mori, Loewner's theorem for maps on operator domains, *Canad. J. Math.* **75** (2023), 912-944.

## 7 Selected invited lectures past ten years

- A series of four one hour lectures, Advanced School and Workshop on Matrix Geometries and Applications, International Centre for Theoretical Physics, Trieste, Italy, 2013.
- Plenary talk, The Seventh Conference on Function Spaces at SIUE, Edwardsville, USA, 2014.
- A series of four one hour lectures, CIMPA Research School on "Operator theory and the principles of quantum mechanics", Meknes, Marocco, 2014.
- Invited one hour talk at Shanghai University, Shanghai, China, 2014.
- Invited one hour talk at Illinois University at Chicago, USA, 2015.
- Invited one hour talk at Technical University, Budapest, Hungary, 2016.
- Invited one hour talk, International Workshop on Operator Theory and Operator Algebras, Lisbon, Portugal, 2016.
- Invited one hour talk at University of Bremen, Germany, 2017.
- Invited one hour talk at University of Reading, UK, 2017.
- Plenary speaker, International Conference on Algebra and Related Topics, Rabat, Marocco, 2018.
- Invited one hour talk at New York University Abu Dhabi, United Arab Emirates, 2018.
- Invited one hour talk at Bolyai Insitute, Szeged, Hungary, 2018.
- Plenary talk, Recent Advances in Operator Theory and Operator Algebras, Bangalore, India, 2018.
- Plenary speaker, International Workshop on Operator Theory and its Applications, Lisbon, Portugal, 2019.
- Keynote speaker, 9th International Conference on Matrix Analysis and Applications, Aveiro, Portugal, 2022.
- Plenary talk, Operator Theory and Beyond, Krakow, Poland, 2022.
- A series of eight one hour lectures, Functional Analysis and Operator Theory South Africa 2022, Berg En Dal, South Africa, 2022.
- CAM Colloquium talk, University of Chicago, Chicago, USA, 2023.
- Plenary talk, Positivity XI, Ljubljana, Slovenia, 2023.
- Mini course, Matrix Theory, Chandigarh, India, 2023.
- Invited one hour talk at Bolyai Insitute, Szeged, Hungary, 2024.