

# Publications

## Differential Geometry, Global Analysis and Mathematical Physics

1. **History of Cosmic Rotation and new Developments**,  
Proc. Intern. Sem. Math. Cosm., Potsdam, Eds. M. Rainer and H.-J. Schmidt, Singapore, World Scientific (1998)
2. **Kinematical Invariants in Gödel-Type Models**,  
Colloquium on Cosmic Rotation, Wissenschaft und Technik Verlag Berlin (2000)
3. **On the Construction of Spacetime Manifolds using Kinematical Invariants**,  
in Proc. MGM IX, Ed. Ruffini, Singapore, World Scientific (2001)
4. **On Closed Rotating Worlds** (with T. Chrobok, Y. Obukhov),  
Phys. Rev. D 63, 104014 (2001)
5. **On the Construction of Shearfree Cosmological Models** (with T. Chrobok, Y. Obukhov),  
Mod. Phys. Lett. A, Vol 16, No. 20, (2001)
6. **Shearfree Rotating Inflation** (with T. Chrobok, Y. Obukhov),  
Phys. Rev. D 66, 043518 (2002)
7. **Characterization of Quadrics by the Principal Curvature Functions** (with F. Dillen, T. Lusala und G. Verbovwe),  
Arch. Math. (Basel) 81 (2003)
8. **Rotation in String Cosmology** (with T. Chrobok, Y. Obukhov),  
Class. Quant. Grav. 20, 104014 (2003)
9. **Closed Minimal Willmore Hypersurfaces of  $S^5(1)$  with Constant Scalar Curvature** (with T. Lusala, L. A. M. Sousa Jr.),  
Asian J. Math. 9 No. 1 (2005)
10. **Total Curvature for  $C^\infty$ -Singular Surfaces with Limiting Tangent Bundle** (with M. Kossowski),  
Ann. Glob. Anal. Geom. 28 No. 2 (2005)
11. **On a Particular Class of Warped Products with Fibres Locally Isometric to Generalized Cartan Hypersurfaces** (with R. Deszcz),  
Colloq. Math. (2006)

12. **On Spacelike Hypersurfaces with Constant Scalar Curvature in the De Sitter Space** (with Z. Hu, S. Zhai),  
J. Diff. Geom. Appl. Vol 25/6 (2007)
13. **The Chern conjecture for isoparametric hypersurfaces in spheres: history and new results**,  
Proc. "Symposium on the differential geometry of submanifolds" (2007)
14. **On Conformal Vector Fields Parallel to the Observer Field** (with A. Dirmeier, M. Plaue),  
Adv. Lorentz. Geom. (2008)
15. **Towards a Proof of the Chern Conjecture for Isoparametric Hypersurfaces in Spheres** (with S. Weiß),  
Proc. 33. South German Diff. Geom. Colloq. (2008)
16. **On Spacetimes with given Kinematical Invariants: Construction and Examples** (with M. Gürses, M. Plaue, T. Schönfeld, L. A. M. Sousa),  
Gödel-type spacetimes, Publ. Series of the K. Gödel Society (2010)
17. **On Hypersurfaces in Space Forms with Particular Curvature Conditions of Tachibana Type** (with R. Deszcz, M. Glogowska, M. Plaue, K. Sawicz),  
Krag. J. Math. 35 No. 2 (2011)
18. **Growth Conditions for Conformal Transformations Preserving Riemannian Completeness** (with A. Dirmeier, M. Plaue)  
J. Geom. Phys. 62 (2011)
19. **How to Prove that Closed Hypersurfaces in Space Forms of Constant Curvature are Isoparametric?** (with S. Weiß)  
Proc. XVI Geometrical Seminar (2011)
20. **On a Particular Type of Product Manifolds and Shear-Free Cosmological Models** (with M. Gürses, M. Plaue),  
Class. Quant. Grav. 28 No. 2 (2011)
21. **On Roter type warped products with 1-dimensional fibres** (with R. Deszcz, M. Plaue),  
accepted, J. Geom. Phys. (2011)
22. **Time Machine Structure for Spacetimes with a Compactly Constructed Region containing CTCs** (Mit A. Diermeier, J. Dietz)  
accepted, J. Geom. Phys. (2011)

23. **A Review of the Chern Conjecture for Isoparametric Hypersurfaces** (with S. Weiß, S.-T. Yau),  
Advances in Geometric Analysis, ALM 21 (2012)
24. **On Isoparametric Hypersurfaces in  $\mathbb{S}^7$**  (with L. Vrancken, S. Weiß),  
accepted, Geometriae Dedicata (2012)
25. **The Geometric Structure of Ori-Type Spacetimes** (with A. Diermeier, J. Dietz)  
submitted (2012)
26. **CMC Hypersurfaces in  $\mathbb{S}^{n+1}$  with Constant Gauß-Kronecker Curvature and Three Distinct Principal Curvatures** (with S. Weiß)  
submitted (2012)
27. **CMC Hypersurfaces in  $\mathbb{S}^{n+1}$  with Constant Scalar Curvature and Three Distinct Principal Curvatures** (with S. Weiß)  
submitted (2012)
28. **On Isoparametric Hypersurfaces with Applications to Special Geometries** (with I. Agricola, F. Khezri),  
submitted (2012)

## Preprints

29. **Global Hyperbolicity of Spacetimes with an Isotropic Hubble Law** (with A. Dirmeier, M. Plaue),  
Preprint (2011)
30. **Closed Willmore Hypersurfaces of  $\mathbb{S}^5$  with Constant Mean and Scalar Curvature** (with L. A. M. Sousa Jr., S. Weiß),  
Preprint (2011)
31. **Gödel-Type Metrics in Einstein-Aether Theory with Nonflat Background** (with M. Gürses, M. Plaue),  
Preprint (2011)
32. **Characteristic Classes for Pseudo Riemannian Manifolds with Volume-Resolvable Metric Singularities** (with S. Born, M. Kossowski),  
Preprint (2011)
33. **Dupin CMC Hypersurfaces with Four Distinct Principal Curvatures** (with S. Weiß),  
Preprint (2011)

## Books

1. **Lineare Algebra für das erste Semester** (with T. Volland),  
Pearson Verlag (2006)
2. **Analysis I für das erste Semester** (with T. Volland),  
Pearson Verlag (2008)
3. **Mathematik für das Bachelor- und Masterstudium I: Grundlagen, Analysis und Lineare Algebra** (with M. Plaue),  
Spektrum Akademischer Verlag (2009)
4. **Mathematik für das erste Semester** (with T. Volland),  
Spektrum Akademischer Verlag (2011)
5. **Mathematik für das Bachelor- und Masterstudium II: Mehrdimensionale Analysis, gewöhnliche und partielle Differentialgleichungen** (with M. Plaue),  
Spektrum Akademischer Verlag (will appear 2011)
6. **A Mesh of Geometry and Topology - woven by Brouwer's Fixed Point Theorem** (with S. Born),  
Springer-Verlag (will appear 2012)
7. **Warped Products: Geometry and Applications** (with F. Dobarro, B. Ünal),  
Oxford Univ. Press (will appear 2012)
8. **Mathematik für das Bachelor- und Masterstudium III: Wahrscheinlichkeiten, Funktionalanalysis und Analysis auf Mannigfaltigkeiten** (with M. Plaue),  
Spektrum Akademischer Verlag (will appear 2012)

## Editorial Work

1. **Colloquium on Cosmic Rotation** (with T. Chrobok, M. Shefaat),  
Wissenschaft und Technik Verlag Berlin (2000)
2. **Advances in Lorentzian Geometry** (with M. Plaue),  
Shaker-Verlag (2008)
3. **Gödel-type spacetimes: History and new developments** (with M. Plaue),  
Publ. Series K. Gödel Society 10 (2010)

4. **New Developments in Lorentzian Geometry** (with M. Plaue, A. Rendall),  
AMS/IP Studies in Advanced Mathematics Vol 49, S.-T. Yau (series ed.)  
(2011)

## Mathematics and Teaching

1. **Intensive Mathematics for Engineers**  
Proc. of the Workshop on Math. Education of First-Year Engineering Students (2009)
2. **New Integrated Exercises for Mathematics Training of Engineers**  
(with M. Plaue),  
Proc. of the Workshop on Math. Education of First-Year Engineering Students (2009)
3. **An Intensive Course in Mathematics for Engineers: Experiences and Prospects** (with S. Jeschke and M. Plaue),  
Proc. of the ICERI (2009)
4. **Development and implementation of application-based exercises for the mathematics education of engineers** (with M. Plaue),  
Proc. EDULEARN 10 (2010)
5. **How to Combine Mathematics with Applications at an Early Stage** (with S. Born),  
preprint (2011)

## Theses

1. **Zur hydrodynamischen Wechselwirkung Brownscher Teilchen**,  
Studienarbeit, TU Berlin (1995)
2. **Verschiedene Beweise des Brouwerschen Fixpunktsatzes**,  
Diplomarbeit, TU Berlin (1995)
3. **Zur kosmischen Rotation: Modelle und Beobachtungsgrößen**,  
Diplomarbeit, TU Berlin (1996)
4. **Zur Konstruktion kosmologischer Raumzeit-Modelle unter Verwendung kinematischer Invarianten**,  
Dissertation, Cuvillier-Verlag Göttingen (2001)
5. **Kinematical Aspects of Lorentzian 4-Manifolds and Curvature of Submanifolds**,  
Habilitationsschrift (2006)

## Book Contributions

1. **Lexikon der Mathematik I**,  
Spektrum Akademischer Verlag (2000)
2. **Lexikon der Mathematik II**,  
Spektrum Akademischer Verlag (2000)
3. **Lehrbuch Analytische Geometrie für die gymnasiale Oberstufe**,  
Duden-Paetec Schulbuchverlag (2007)
4. **Mathematik für die Jahrgangsstufe 11**,  
Duden-Paetec Schulbuchverlag (2008)
5. **Lehrbuch Mathematik für die gymnasiale Oberstufe**,  
Duden-Paetec Schulbuchverlag (2008)