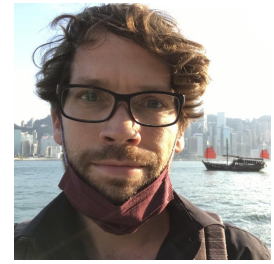


Moritz Andreas REINTJES
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Biography

Moritz Reintjes received a Ph.D. from the University of California in Davis, a Master degree (Diplom) from the University of Regensburg in Germany (where he grew up) and a B.Sc. (Honours) from the University of Cape Town. He held post-doctoral positions at the University of Regensburg (2011-2012), the Max Planck Institute for Gravitational Physics (2012), the University of Michigan - Ann Arbor (2013), the Instituto de Matematica Pura e Aplicada in Rio de Janeiro (2013-2016), the Instituto Superior Tecnico in Lisbon (2017 - 2018) and the University of Konstanz (2019 - 2021). He joined the City University of Hong Kong as an Assistant Professor in 2021.

He is interested in Mathematics that models phenomena of nature. His research concerns Mathematical Physics, using and developing the theory of Partial Differential Equations and Geometry. In particular, he worked for several years on the problem whether spacetime singularities of shock waves in General Relativity are removable. In collaboration with Blake Temple (UC Davis), he recently resolved this problem in the affirmative, and their method of proof extends Uhlenbeck compactness to Lorentzian geometry and to Yang-Mills connections with compact and non-compact gauge groups.

Employment

Department of Mathematics
City University of Hong Kong
2 Aug 2021 → present

Research outputs

On weak solutions to the geodesic equation in the presence of curvature bounds

Reintjes, M. & Temple, B., 25 May 2024, In: Journal of Differential Equations. 392, p. 306-324

On the Optimal Regularity Implied by the Assumptions of Geometry II: Connections on Vector Bundles

Reintjes, M. & Temple, B., 11 Mar 2024, (Accepted/In press/Filed) In: Advances in Theoretical and Mathematical Physics.

Entangled quantum states of causal fermion systems and unitary group integrals

Finster, F., Kamran, N. & Reintjes, M., 11 Jul 2023, (Accepted/In press/Filed) In: Advances in Theoretical and Mathematical Physics.

Optimal regularity and Uhlenbeck compactness for general relativity and Yang-Mills theory

Reintjes, M. & Temple, B., 29 Mar 2023, In: Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences. 479, 2271, 20220444.Scopus citations: 1

ON THE OPTIMAL REGULARITY IMPLIED BY THE ASSUMPTIONS OF GEOMETRY I: CONNECTIONS ON TANGENT BUNDLES

REINTJES, M. & TEMPLE, B., Dec 2022, In: Methods and Applications of Analysis. 29, 4, p. 303-396 94 p.

Uniform dissipativity for mixed-order hyperbolic systems, with an application to relativistic fluid dynamics

Freistühler, H., Reintjes, M. & Sroczinski, M., 15 Jul 2022, In: Journal of Differential Equations. 325, p. 70-81

Decay and subluminality of modes of all wave numbers in the relativistic dynamics of viscous and heat conductive fluids
Freistühler, H., Reintjes, M. & Temple, B., May 2021, In: Journal of Mathematical Physics. 62, 5, 053101.Scopus citations : 3

How to smooth a crinkled map of space-time: Uhlenbeck compactness for L^∞ connections and optimal regularity for general relativistic shock waves by the Reintjes–Temple equations
Reintjes, M. & Temple, B., Sept 2020, In: Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences. 476, 2241, 20200177.Scopus citations: 3

Shock Wave Interactions and the Riemann-Flat Condition: The Geometry Behind Metric Smoothing and the Existence of Locally Inertial Frames in General Relativity
REINTJES, M. & TEMPLE, B., Mar 2020, In: Archive for Rational Mechanics and Analysis. 235, 3, p. 1873-1904Scopus citations: 4

Optimal metric regularity in General Relativity follows from the RT-equations by elliptic regularity theory in L^p -spaces
Reintjes, M. & Temple, B., 2020, In: Methods and Applications of Analysis. 27, 3, p. 199–242 43 p.

The regularity transformation equations: An elliptic mechanism for smoothing gravitational metrics in general relativity
REINTJES, M. & TEMPLE, B., 2020, In: Advances in Theoretical and Mathematical Physics. 24, 5, p. 1203-1245Scopus citations: 2

A Note on Incompressibility of Relativistic Fluids and the Instantaneity of their Pressures
Reintjes, M., 1 Aug 2018, In: Reports on Mathematical Physics. 82, 1, p. 113-120

The fermionic signature operator and space-time symmetries
Finster, F. & Reintjes, M., 2018, In: Advances in Theoretical and Mathematical Physics. 22, 8, p. 1907-1937Scopus citations: 2

Constrained systems of conservation laws: A geometric theory
REINTJES, M., Dec 2017, In: Methods and Applications of Analysis. 24, 4, p. 407–444 37 p.

The Fermionic Signature Operator and Hadamard States in the Presence of a Plane Electromagnetic Wave
Finster, F. & Reintjes, M., 1 May 2017, In: Annales Henri Poincare. 18, 5, p. 1671-1701Scopus citations: 6

Spacetime is locally inertial at points of general relativistic shock wave interaction between shocks from different characteristic families
Reintjes, M., 2017, In: Advances in Theoretical and Mathematical Physics. 21, 6, p. 1525-1611Scopus citations: 4

"Regularity singularities" and the scattering of gravity waves in approximate locally inertial frames
REINTJES, M. & TEMPLE, B., Sept 2016, In: Methods and Applications of Analysis. 23, 3, p. 233–258 25 p.

A non-perturbative construction of the fermionic projector on globally hyperbolic manifolds II - Space-times of infinite lifetime
Finster, F. & Reintjes, M., 2016, In: Advances in Theoretical and Mathematical Physics. 20, 5, p. 1007-1048Scopus citations: 11

No regularity singularities exist at points of general relativistic shock wave interaction between shocks from different characteristic families
Reintjes, M. & Temple, B., 8 May 2015, In: Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences. 471, 2177, 20140834.Scopus citations: 6

A non-perturbative construction of the fermionic projector on globally hyperbolic manifolds I-Space-times of finite lifetime
Finster, F. & Reintjes, M., 2015, In: Advances in Theoretical and Mathematical Physics. 19, 4, p. 761-803Scopus citations : 19

The Dirac equation and the normalization of its solutions in a closed Friedmann-Robertson-Walker universe
Finster, F. & Reintjes, M., 30 Apr 2009, In: Classical and Quantum Gravity. 26, 10, 105021.Scopus citations: 14

Activities

Optimal regularity and Uhlenbeck compactness in Lorentzian geometry and beyond

Moritz Andreas REINTJES (Speaker)

13 Jul 2023

Optimal regularity and Uhlenbeck compactness in Lorentzian geometry and beyond

Moritz Andreas REINTJES (Speaker)

29 Jun 2023

Optimal regularity and Uhlenbeck compactness in Lorentzian geometry and beyond

Moritz Andreas REINTJES (Speaker)

19 Jun 2023 → 23 Jun 2023

Optimal regularity and Uhlenbeck compactness in Lorentzian geometry and beyond

Moritz Andreas REINTJES (Speaker)

13 Jun 2023

Optimal regularity and Uhlenbeck compactness in Lorentzian geometry and beyond

Moritz Andreas REINTJES (Speaker)

22 May 2023

On the regularity implied by the assumptions of geometry

Moritz Andreas REINTJES (Speaker)

13 Mar 2023 → 18 Mar 2023

On the Regularity Implied by the Assumptions of Geometry

Moritz Andreas REINTJES (Speaker)

19 Dec 2022

Mathematical Reviews (Journal)

Moritz Andreas REINTJES (Reviewer)

3 Dec 2022 → 4 Dec 2022

Removing Crinkles in Spacetime

Moritz Andreas REINTJES (Speaker)

2 Dec 2022

On the regularity implied by the assumptions of geometry

Moritz Andreas REINTJES (Speaker)

4 Jul 2022

On the regularity implied by the assumptions of geometry

Moritz Andreas REINTJES (Speaker)

30 Jun 2022

Mathematical Reviews (Journal)

Moritz Andreas REINTJES (Reviewer)

15 Apr 2022

On the regularity implied by the assumptions of geometry II: The case of Vector Bundles

Moritz Andreas REINTJES (Speaker)

1 Feb 2022

Mathematical Reviews (Journal)

Moritz Andreas REINTJES (Reviewer)

1 Jan 2022

Die Allgemeine Relativitätstheorie und Schwarze Löcher

Moritz Andreas REINTJES (Speaker)

10 Dec 2021

Removing Spacetime Singularities

Moritz Andreas REINTJES (Speaker)

14 Jul 2021