



Universität Stuttgart



# Kolloquium des Fachbereichs Mathematik

Es spricht am Montag, 30. Januar 2023 um 16:00 Uhr

**Herr Professor Wilderich Tuschmann (KIT)**

zum Thema: „**Spaces and Moduli Spaces of Riemannian Metrics**“

## Abstract:

Consider a smooth manifold with a Riemannian metric satisfying some sort of geometric constraint like, for example, positive scalar curvature, non-negative Ricci or negative sectional curvature, being Einstein, Kähler, Sasaki, etc. A natural question to ponder is then what the space of all such metrics does look like, and, moreover, one can also study this question for the corresponding moduli spaces of metrics, i.e., quotients of the former by the diffeomorphism group of the manifold, acting by pulling back metrics.

These spaces are customarily equipped with the topology of smooth convergence on compact subsets and the quotient topology, respectively, and their topological properties then provide the right means to measure 'how many' different metrics and geometries the given manifold actually does exhibit, and since Weyl's early result on the connectedness of the space of positive Gaussian curvature metrics on the two-sphere and the foundations of Teichmüller theory, uniformization and geometrization, the study of spaces of metrics and their moduli has been a topic of interest for differential geometers, global and geometric analysts and topologists alike.

In my talk, I will provide a gentle introduction to the subject and its history and then report on some recent results and open questions with a focus on non-negative Ricci or sectional curvature as well as Ricci flat and Hyperkähler manifolds, and, if time permits, also discuss broader non-traditional approaches from metric geometry and analysis to these objects and topics.

Der Vortrag findet im Sitzungssaal 8.122 der Fakultät Mathematik und Physik, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen statt. Interessenten sind herzlich eingeladen!

Die Dozentinnen und Dozenten des Fachbereichs Mathematik