

# A-Fri-Ka Riemannian Topology Research Seminar

Meeting, October 28th 2021 (online)

2:00 - 3:00 pm **The topology of the space of PSC metrics with non-abelian symmetry**

(CET)

Speaker:  
Llohan Speranca (São Paulo)

Abstract:

In a seminal work, Lawson and Yau showed that compact Riemannian manifolds with non-abelian symmetry admit metrics of positive scalar curvature. Later on, it became clear that a better result with a more natural proof would follow by applying Cheeger deformations. From the naturality of the last approach a conjecture was raised that G-invariant PSC metrics could always be extended from the boundary of a G-manifold to its interior. Here we go beyond the conjecture and prove that the space of G-invariant PSC metrics is contractible. To this aim, we introduce a generalization of the Cheeger deformation and deduce its analytical properties.

Joint work with Leonardo Cavenaghi.

3:10 - 4:10 pm **Alexandrov regions for the practitioner**

(CET)

Speaker:  
Artem Nepechiy (Augsburg)

Abstract:

Alexandrov spaces are intrinsic, complete metric spaces with a synthetic lower curvature condition. They appear naturally as Gromov Hausdorff limits of Riemannian manifolds with uniform bounds on curvature, dimension and diameter. Sometimes it is useful to consider situations, where the limit space is not complete. For this purpose we introduce the term Alexandrov region and investigate to which degree results from Alexandrov geometry carry over to the non-complete setting.

5:00 - 6:00 pm **Moduli spaces of nonnegatively curved metrics on exotic spheres**

(CET)

Speaker:

Mcfeely Jackson Goodman (Berkeley)

Abstract:

We show that the moduli space of nonnegatively curved metrics on each manifold homeomorphic to  $S^7$  has infinitely many path components. The components are distinguished using the Kreck-Stolz  $s$ -invariant computed for metrics constructed by Goette, Kerin and Shankar. The invariant is computed by extending each metric to the total space of an orbifold disc bundle and applying generalizations of the Atiyah-Patodi-Singer index theorem for orbifolds with boundary.