Online Differential Geometry Workshop 2021 - 2nd of September 2021

Morning Session.

09.45 - 10.00 : *"Opening"*
10.00 - 10.45 : **Yu Fu**, *"Recent progress of Chen's biharmonic conjecture"*
11.00 - 11.45 : **Roger Moser**, *"Intrinsic fractional harmonic maps: a partial regularity result"*
12.00 - 12.45 : **Anna Siffert**, *"Stability of harmonic self-maps between cohomogeneity one manifolds"*

Lunch Break.

12.45 - 14.30 : Lunch Break

Afternoon Session.

14.30 - 15.15 : **Álvaro Pámpano**, *"A new characterization of biconservative surfaces in 3-space forms"*
15.30 - 16.15 : **Yelin Ou**, *"Some recent work on conformal biharmonic maps"*

Socializing.

16.15 - ??? : Virtual Party

Abstracts of the talks

Yu Fu, *"Recent progress of Chen's biharmonic conjecture"*
In the past two decades, biharmonic submanifolds have attracted much attention from mathematicians all over the world. In particular, concerning Chen's biharmonic conjecture, many important progress have been obtained. In this lecture, I would like to report the proof of Chen's biharmonic conjecture for 4-dimensional hypersurfaces and some related results. This is a work jointly with Prof. Ming-Chun Hong and Dr. Xin Zhan.

Roger Moser, *"Intrinsic fractional harmonic maps: a partial regularity result"*
Harmonic maps solve a PDE of second order. There has been some recent interest in variants of the harmonic map problem where one has an equation of fractional order less than 2 instead. The typical approach to this problem is to embed the target manifold in a Euclidean space and use tools from harmonic analysis to make sense of the fractional order differential operators. Most of these theories are extrinsic in the sense that the resulting notion of fractional harmonic maps depends on the embedding chosen.

I will discuss an intrinsic approach and some partial regularity results, which are currently available (apart from the case of energy minimisers) if the target manifold is a round sphere. The talk is based on joint work with James Roberts.

Anna Siffert, *"Stability of harmonic self-maps between cohomogeneity one manifolds"*
In a recent paper, Püttmann and Siffert studied systematically harmonic self-maps of cohomogeneity one manifolds. In this talk we investigate the corresponding Jacobi equation describing the stability of such harmonic self-maps. We explicitly solve the Jacobi equation for some harmonic self-maps in the cases of spheres, special orthogonal groups and SU(3). This is joint work with Volker Branding.

Álvaro Pámpano, *"A new characterization of biconservative surfaces in 3-space forms"*
In this talk, we characterize non-CMC biconservative surfaces of 3-space forms as binormal evolution surfaces swept out by evolving a critical curve for a curvature depending energy under the associated binormal flow. Exploiting this, we conclude by proving the existence of proper closed biconservative surfaces in the 3-sphere.

Yelin Ou, *"Some recent work on conformal biharmonic maps"*
In this talk we will first give a brief review of some links between biharmonicity and conformality of maps between Riemannian manifolds. We then present some recent work on biharmonic conformal immersions, biharmonic conformal submersions, biharmonic conformal diffeomorphisms, and some classifications of k-polyharmonic conformal maps between space forms.