

Rigidity estimates for isometric and conformal maps on the sphere

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Abstract

In this talk I would like to discuss stability aspects of the class of rigid motions, resp. Möbius transformations, among Sobolev maps from the standard round sphere into the ambient Euclidean space.

Unlike similar in flavour results for maps defined on domains, not only an isometric, resp. conformal, deficit is necessary in this more flexible setting, but also a deficit measuring the distortion of the sphere under the maps in consideration. The latter is defined as an associated isoperimetric type of deficit.

The focus will mostly be on the case when the ambient dimension is 3, and we will also explain why, in both cases, the estimates are optimal in their corresponding settings. The adaptations needed in higher dimensions and the particular case of sphere-valued maps will also be addressed.

The talk will be based on previous works with Stephan Luckhaus and Jonas Hirsch, and an ongoing one with Xavier Lamy and Andre Guerra.