RUHR-UNIVERSITÄT BOCHUM

FAKULTÄT FÜR MATHEMATIK

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Oberseminar Dynamische Systeme

Contact non-squeezing at large scale via generating functions

Dienstag, 15. November 2022
16:15 Uhr – Raum IA 1/53

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Abstract:

In 2006 Eliashberg, Kim and Polterovich discovered a non-squeezing phenomenon in contact topology: they proved that if \pi r^2 < k < \pi R^2 for some integer k then the prequantization in R^2n x S^1 of the ball of radius R cannot be squeezed by a contact isotopy into the prequantization of the ball or radius r. On the other hand, by a geometric construction based on the existence of a positive contractible loop of contactomorphisms of the sphere S^{2n-1} for n > 1, they also proved that if \pi R^2 < 1 and n > 1 the prequantization of the ball of radius R can be squeezed into the prequantization of the ball of radius r for r arbitrarily small. The case 1 < \pi r^2 < \pi R^2 with no integers between \pi r^2 and \pi R^2 was settled by Chiu in 2017 and Fraser in 2016 using respectively holomorphic curves and microlocal sheaves: they proved that also in this case non-squeezing holds. In 2011 I gave a generating functions proof of the non-squeezing theorem of Eliashberg, Kim and Polterovich, in which an important role was played by translated points of contactomorphisms. In my talk I will present a joint work in progress with Maia Fraser and Bingyu Zhang to obtain a generating functions proof of the general non-squeezing result of Chiu and Fraser, in which a key role is played by translated chains, a generalization of translated points.

Guests are very welcome!