ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

6. Topology

1991 MS Classification: 57, 55, 22
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On the group of area preserving homeomorphisms

Let $\mathrm{Homeo}^L_\Omega(D^2)$ denote the group of orientation preserving and area preserving Lipschitz homeomorphisms of the 2-disk D^2. Let $\mathrm{Homeo}^L(S^1)_0$ denotes the group of orientation preserving Lipschitz homeomorphisms of the circle $S^1 = \partial D^2$. Let $\mathrm{Homeo}^L_\Omega(D^2, \partial D^2)$ denote the kernel of the restriction homomorphism $\mathrm{Homeo}^L_\Omega(D^2) \longrightarrow \mathrm{Homeo}^L(S^1)_0$. One can define the Calabi invariant $\mathrm{Homeo}^L_\Omega(D^2, \partial D^2) \longrightarrow \mathbf{R}$ and we show a relationship between the Euler class in the group cohomology of $\mathrm{Homeo}^L(S^1)_0$ and the Calabi invariant, generalizing our previous result for the corresponding groups of diffeomorphisms. We also give some application to the group of piecewise linear homeomorphisms.

Reference: T. Tsuboi, The Calabi invariant and the Euler class, to appear in Transactions Amer. Math. Soc.