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Oberseminar Dynamische Systeme

On the ergodicity of the frame flow on negatively-curved manifolds

Dienstag, 18. Januar 2022
16:15 Uhr – via Zoom

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Abstract:

The frame flow on negatively-curved manifolds is one of the first historical examples of partially hyperbolic dynamics. It is known that this flow is ergodic on nearly-hyperbolic manifolds and on odd-dimensional manifolds (dimension not equal to 7). On the contrary, this flow is never ergodic on Kähler manifolds (e.g. complex hyperbolic manifolds). Brin thus naturally conjectured in the 70s that even-dimensional manifolds with $1/4$ -pinched curvature should have an ergodic frame flow but this question is still widely open today. In this talk, I will explain recent progress achieved on this conjecture: I will show that $4k+2$ -dimensional (resp. $4k$ -dimensional) manifolds with ~ 0.27 -pinched curvature (resp. ~ 0.55 -pinched curvature) have an ergodic frame flow. This new approach combines three tools: 1) hyperbolic dynamics (transitivity group, representations of Parry's free monoid), 2) reduction of structure groups on spheres, 3) harmonic analysis on the unit tangent bundle (twisted Pestov/Weitzenböck identities). Joint work with Mihajlo Cekić, Andrei Moroianu, Uwe Semmelmann.

Guests are very welcome!