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“Ergodic and Non-Ergodic Metrics on Embedded Surfaces”

Abstract:

We give new examples of surfaces embedded in \mathbb{R}^3 with chaotic (ergodic) geodesic flow, including those created by the 'finite horizon' construction, that have the 'focusing cap'. We show that there exist embedded surfaces with Anosov (ie. very strong chaos) geodesic flow. Finally we show that arbitrarily close to the ergodic examples are non-ergodic examples. Thus the focusing cap systems lie on the boundary of the ergodic systems.