Closed geodesics with prescribed intersection numbers

Yann Chaubet

Université Paris-Saclay

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On a closed negatively curved surface, Margulis gave the asymptotic growth of the number of closed geodesics of bounded length, when the bound goes to infinity. In this talk, I will present a similar asymptotic result for closed geodesics for which certain intersection numbers — with a given family of pairwise disjoint simple closed geodesics — are prescribed. This result is obtained by introducing a dynamical scattering operator related to the surface (with boundary) obtained by cutting our original surface along the simple curves, and by proving a trace formula.