Counting in infinite measure

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Abstract

Let X be a Hadamard manifold of dimension $\geqslant 2$ with sectionnal curvature pinched between two negative constants. We consider the action of some discrete group Γ of positive isometries of X, torsion free and acting properly and discontinuously on X. These exotic groups enable us to work in the context of manifolds X/Γ with infinite measure. We will investigate two problems: the first concerns the asymptotic behavior of the orbital function N_Γ of Γ. The second is to find an asymptotic to the number $N(R)$ of primitive closed geodesics on X/Γ with length smaller than R. After an introduction of main notations, we will present a coding of the unit tangent bundle T^1X/Γ which allows us to write the previous quantities N_Γ and $N(R)$ as sums of iterates of some perturbation of a transfert operator. Finally we will explain how to deduce the results using some spectral properties of this operator.

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