On the dimension of limit sets on the real projective plane via stationary measures

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Abstract: We consider the (semi)group action of SL(3, R) on RP^2 a prime example of non-conformal, non-linear, and non-strictly contracting action. We study the Hausdorff dimension of a dynamically defined limit set in RP^2 and generalize the classical Patterson-Sullivan formula. A prominent example is Anosov representations in SL(3, R), for which we prove the equality between the Hausdorff dimensions and the affinity exponents of their limit sets. As an application, it reveals a dimension jump in the Barbot component, which is a local generalization of Bowen's dimension rigidity result. Another example is the Rauzy gasket, for which we confirm a folklore conjecture about the Hausdorff dimension of the gasket. These results originate from a dimension formula of stationary measures on RP^2. This talk is based on the joint works with Yuxiang Jiao, Jialun Li, Disheng Xu.