

Volume entropy for minimal presentations of surface groups in all ranks

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Received: 19 December 2014 / Accepted: 27 July 2015 / Published online: 4 August 2015
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Abstract We study the volume entropy of a class of presentations (including the classical ones) for all surface groups, called *minimal geometric presentations*. We rediscover a formula first obtained by Cannon and Wagreich (Math Ann 293(2), 239–257, 1992) with the computation in a non published manuscript by Cannon (The growth of the closed surface groups and the compact hyperbolic coxeter groups, 1980). The result is surprising: an explicit polynomial of degree n , the rank of the group, encodes the volume entropy of all classical presentations of surface groups. The approach we use is completely different. It is based on a dynamical system construction following an idea due to Bowen and Series (Inst Hautes Études Sci Publ Math 50, 153–170, 1979) and extended to all geometric presentations in Los (J Topol, 7(1), 120–154, 2013). The result is an explicit formula for the volume entropy of minimal presentations for all surface groups, showing a polynomial dependence in the rank $n > 2$. We prove that for a surface group G_n of rank n with a classical presentation

The authors have been partially supported by MINECO Grant Numbers MTM2008-01486 and MTM2011-26995-C02-01. This work has been carried out thanks to the support of the ARCHIMEDE Labex (ANR-11-LABX- 0033).

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