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Alan W Reid* (areid@math.utexas.edu), Dept of Mathematics, The University of Texas, 1 University Station, Austin, TX 78712. *Geodesics and commensurability classes of arithmetic hyperbolic 3-manifolds.*

In this talk we discuss the proof that if M is an arithmetic hyperbolic 3-manifold, the set $\mathbb{Q}L(M)$ of all rational multiples of lengths of closed geodesics of M both determines and is determined by the commensurability class of M . A corollary of this is that the spectrum of the Laplace operator of M determines the commensurability class of M . Part of the proof uses a detailed analysis of Galois closures of number fields with exactly one complex place. (Received January 18, 2008)