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Ian Biringer* (biringer@math.uchicago.edu) and **Juan Souto** (jsouto@umich.edu).

Finiteness Theorems for Hyperbolic 3-Manifolds.

We will investigate the relationship between three invariants of closed hyperbolic 3-manifolds: injectivity radius, the rank of the fundamental group, and the first eigenvalue of the Laplacian. Using a theorem of Vigneras, we will then deduce that there are only finitely many commensurability classes of closed, arithmetic, hyperbolic 3-manifolds with bounded rank and injectivity radius. (Received August 25, 2008)