COMPUTING ARITHMETIC INVARIANTS OF 3-MANIFOLDS

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Abstract. Snap is a computer program for computing arithmetic invariants of hyperbolic 3-manifolds, built on Jeff Weeks's SnapPea and the number theory package Pari. Its approach is to compute the hyperbolic structure to very high precision, and use this to find an exact description of the structure. Then the correctness of the hyperbolic structure can be verified, and the arithmetic invariants of Neumann and Reid can be computed. Snap also computes high precision numerical invariants such as volume, Chern–Simons invariant, eta invariant, and the Borel regulator.