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**Dominic Lanphier** and **Jason Rosenhouse\*** ([rosenhjd@jmu.edu](mailto:rosenhjd@jmu.edu)), Dept. of Mathematics and Statistics, James Madison University, MSC 1911, Harrisonburg, VA 22807. *Cheeger Constants of Certain Arithmetic Hyperbolic Three-Manifolds*. Preliminary report.

We use combinatorial and geometric techniques to investigate the Cheeger constants of an infinite family of arithmetic hyperbolic three-manifolds. These are surfaces that arise from fundamental domains for the action of the Euclidean Bianchi groups on complex upper half three-space. We derive an upper bound on the Cheeger constants of these surfaces. We also obtain a stronger upper bound that holds asymptotically. Our results are relevant to Selberg's eigenvalue conjecture for these surfaces. (Received September 26, 2006)