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Pralay Chatterji (pralay@math.rice.edu), Department of Mathematics, Rice University, Houston, TX 77005-1892, and **Dave Witte Morris*** (Dave.Morris@uleth.ca), Department of Math and Comp Sci, University of Lethbridge, Lethbridge, Alberta T1K 3M4, Canada. *Geometric interpretation of the $\mathbb{Q}$-rank of a locally symmetric space.* Preliminary report.

Let $X = \Gamma\backslash G/K$ be a locally symmetric space of finite volume (and assume G is semisimple). The $\mathbb{Q}$-rank of X is defined from algebraic properties of the discrete group Γ, but it has geometric interpretations. In particular, a slight variant of a conjecture of G. Tomanov and B. Weiss states that the $\mathbb{Q}$-rank should be equal to the maximum dimension of a closed, simply connected flat in X. (A *flat* in a Riemannian manifold is a totally geodesic, flat submanifold.) This is analogous to the fact that if $\widetilde{X} = G/K$ is a symmetric space, then the $\mathbb{R}$-rank of G is equal to the maximum dimension of a closed, simply connected flat in $\widetilde{X}$. We discuss $\mathbb{Q}$-rank and progress toward a proof of this conjecture. (Received February 21, 2004)