The Spring Topology and Dynamics Conference 2009, March 7–9, 2009, University of Florida, Gainesville, FL, USA

Coauthors: Kevin Wortman (University of Utah, Salt Lake City)

FINITENESS PROPERTIES OF S-ARITHMETIC GROUPS OF GLOBAL RANK ONE

KAI-UWE BUX

We prove the rank conjecture for S-arithmetic groups of global rank one in positive characteristic, i.e., that the finiteness length of such groups is one less than the sum of their local ranks. The underlying geometric problem turns out to be the connectivity length of horospheres in Euclidean buildings, that is, the maximum dimension up to which all homotopy groups vanish. Specifically, we show that

(a) horospheres in irreducible Euclidean buildings are always spherical (i.e., have connectivity length one less than their dimension) and that

(b) the same holds for horospheres in reducible Euclidean buildings if the horospheres are not parallel to an irreducible factor.

The rank conjecture then follows.

University of Virginia
E-mail address: kb2ue@virginia.edu