1173-11-83 **Akshat Das*** (atdas@uh.edu), Department of Mathematics, University of Houston, and **Alan Haynes** (haynes@math.uh.edu), Department of Mathematics, University of Houston. *An adelic version of the three gap theorem.*

In order to understand problems in dynamics which are sensitive to arithmetic properties of return times to regions, it is desirable to generalize classical results about rotations on $\mathbb{R}/\mathbb{Z}$ to the setting of rotations on adelic tori. One such result is the classical three gap theorem, which is also referred to as the three distance theorem and as the Steinhaus problem. It states that, for any $\alpha \in \mathbb{R}$ and $N \in \mathbb{N}$, the collection of points $n\alpha$ mod 1, $1 \leq n \leq N$, partitions $\mathbb{R}/\mathbb{Z}$ into component arcs having one of at most three distinct lengths. Since the 1950s, when this theorem was first proved independently by multiple authors, it has been reproved numerous times and generalized in many ways. One of the more recent proofs has been given by Marklof and Strömbergsson using a lattice based approach to gaps problems in Diophantine approximation. In this talk, we use an adaptation of this approach to the adeles to prove a natural generalization of the classical three gap theorem for rotations on adelic tori. This is joint work with Alan Haynes. (Received September 15, 2021)