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Byron N. Heersink* (heersin2@illinois.edu). *The spacing statistics of Farey fractions and the horocycle flow in $SL(2, \mathbb{R})$.*

Recently, Athreya and Cheung constructed a cross section for the horocycle flow on the modular surface $X = \mathrm{SL}(2, \mathbb{R}) / \mathrm{SL}(2, \mathbb{Z})$ having properties related to the spacings in Farey fractions. This talk will discuss how to lift this section to covers $\mathrm{SL}(2, \mathbb{R}) / H$ of X , with H a finite index subgroup of $\mathrm{SL}(2, \mathbb{Z})$. As an application, the existence of the limiting gap distribution of various subsets of Farey fractions will be established. (Received September 21, 2014)