

1035-11-1604 **Chris Kurth*** (kurthc@iastate.edu), 4210 Lincoln Swing #10, Ames, IA 50014. *Farey Symbols and Finite Index Subgroups of $PSL_2(\mathbb{Z})$* .

Farey symbols, introduced by Ravi Kulkarni in 1991, are a tool for working with finite index subgroups of $PSL_2(\mathbb{Z})$. Given such a group Γ , a Farey symbol for Γ is a certain finite sequence of rational numbers (representing vertices of a fundamental domain) together with pairing information for the edges between the vertices. They are a compact way of encoding the information about the group and they provide a simple way to do calculations with the group. For example: calculating an independent set of generators and decomposing group elements into a word in these generators, finding coset representatives, elliptic points, and genus of the group, testing if the group is congruence, etc. Such calculations are useful when studying modular forms. In this talk we will discuss how Farey Symbols work and the algorithms involved. (Received September 20, 2007)