



# YMC 2006



## Young Mathematicians Conference 2006

*August 4<sup>th</sup>-6<sup>th</sup> at The Ohio State University.*

### NUMBER OF ORBITS ASSOCIATED TO HECKE TRIANGLE GROUPS

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**Abstract of Report Talk:** We consider the group  $G(\lambda)$  of fractional linear transformations generated by  $S(z) = z + \lambda$  and  $T(z) = -1/z$ . We will be interested in the case  $\lambda = \lambda_q = 2 \cos(\pi/q)$  with  $q \geq 3$ ; in that case,  $G(\lambda)$  is a Fuchsian group. The matrix entries of the elements of  $G(\lambda_q)$  are given by numerators and denominators of associated  $\lambda$ -continued fractions, or elements of the orbit of  $\infty$  under the action of  $G(\lambda_q)$ . The orbit of  $\infty$  is clearly a subset of  $\mathbb{Q}(\lambda)$ ; however, the only values of  $q$  for which  $\mathbb{Q}(\lambda)$  consists of only one orbit are  $q = 3$  and  $q = 5$ . We present some conjectures and lower bounds on the number of orbits in  $\mathbb{Q}(\lambda)$  for  $q$  odd, and a proof that there are infinitely many orbits for  $q$  even. [UE10213533]

[Joint work with Elise Hanson (Scripps College), Adam Merberg (Brown University)]

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