“Group Theory International” Online Seminar

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“Distinguishing triangle groups by their finite quotients"

Thursday, Feb 2, 2pm (New York Time)

Abstract:

For positive integers p, q and r, the ordinary (p,q,r) triangle group $\Delta^o(p,q,r)$ is the abstract group with presentation

$$< x,y,z \mid x^p = y^q = z^r = xyz = 1 >$$

This group is finite, or infinite soluble, or infinite insoluble, according to whether 1/p + 1/q + 1/r is greater than, equal to, or less than 1. As part of some work with Martin Bridson and Alan Reid on distinguishing Fuchsian groups, I will show how to prove that two triangle groups Δ^op,q,r) and Δ^o (p',q',r') have the same finite quotients if and only if they are isomorphic, that is, if and only if the triple (p',q',r') is a permutation of (p,q,r). The proof involves distinguishing triangle groups mainly by their cyclic, dihedral and 2-dimensional projective quotients, plus direct products of these and extensions of abelian groups, and some elementary number theory.

Next presentation: **Feb 16, 2012.** *TBA*

Algebraic Cryptography Center