

A monstrous(?) complex hyperbolic orbifold.
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I will report on progress with Tathagata Basak on the "Monstrous Proposal", namely the conjecture: Complex hyperbolic 3-space, modulo a particular discrete group, and with orbifold structure changed in a simple way, has fundamental group equal to $(M \times M) \text{ (semidirect) } \mathbb{Z}/2$, where M is the Monster finite simple group.

Our progress is a proof that this orbifold fundamental group has generators that satisfy defining relations for $(M \times M) \text{ (semidirect) } \mathbb{Z}/2$. It follows that either the monstrous proposal is true, or else the orbifold fundamental group collapses to $\mathbb{Z}/2$. The generators and relations are extremely natural from the complex hyperbolic perspective, keeping hopes high for the conjecture.

Abstract: d that a closed real hyperbolic 3-manifold virtually contains any prescribed torsion subgroup as a direct factor in homology. In this talk we will discuss joint work with Daniel Groves generalizing Sun's result.