

CONSTRUCTING MANIFOLDS FROM TREES OF SIMPLICES

Bruno Benedetti, University of Miami

A 3-ball is a simplicial complex homeomorphic to the unit ball in \mathbb{R}^3 . A "tree of tetrahedra" is a 3-ball whose dual graph is a tree. It is easy to see that every (connected) 3-manifold can be obtained from some tree of tetrahedra by recursively gluing together two boundary triangles. The quantum physicist Tsugui Mogami has studied "Mogami manifolds", that is, those manifolds that can be obtained from a tree of tetrahedra by recursively gluing together two *incident* boundary triangles. In 1995 he conjectured that all 3-balls are Mogami. Mogami's conjecture would imply a much desired exponential bound (crucial for the convergence of certain models in quantum gravity) for the number of 3-balls with N tetrahedra.

Unfortunately, we show that Mogami's conjecture does not hold.