Thierry Hild: The non-compact hyperbolic 4-orbifold of minimal volume

Starting from the famous canonball packing – by Gauss the densest lattice packing in Euclidean 3-space – we show that the Coxeter group $[4, 3^{2,1}]$ has smallest covolume among all discrete subgroups of hyperbolic isometries with at least one cusp in dimension 4. We sketch the proof. An important ingredient is the theory of crystallographic groups.