

Profinite rigidity in low dimensions

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A finitely generated residually finite group G is called *profinutely rigid* if whenever a finitely generated residually finite group H satisfies $\widehat{H} \cong \widehat{G}$, then $H \cong G$ (where \widehat{G} denotes the profinite completion). Although by now there are many examples of groups that are not profinitely rigid, there seems to be a growing sense that when G is a free group, surface group or the fundamental group of a finite volume hyperbolic 3-manifold, things are different and these will be profinitely rigid. These lectures intend to describe background and recent progress on this topic.