RIPS CONSTRUCTION WITHOUT UNIQUE PRODUCT

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We extend Gromov's graphical small cancellation theory to graphical small cancellation presentations over free products. We explain Rips-Segev's construction of torsion-free groups without unique product by viewing these groups as given by graphical small cancellation presentations over free products. Our small cancellation theorem then provides first examples of Gromov hyperbolic groups without unique product.

Given a finitely presented group Q, we produce a short exact sequence $1 \to N \hookrightarrow G \twoheadrightarrow Q \to 1$ such that G is a torsion-free Gromov hyperbolic group without unique product and N is 2-generated. Varying Q, we obtain a wide diversity of concrete examples of Gromov hyperbolic groups without unique product. This is joint work with Goulnara Arzhantseva.

Supported by ERC-grant ANALYTIC 259527 of G. Arzhantseva and the Vienna University Research Grant 2013.

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