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*On the isomorphism problem for relatively hyperbolic groups. (Joint with François Dahmani)*

The isomorphism problem asks whether two group presentations  $\langle X \mid R \rangle$ ,  $\langle Y \mid S \rangle$  of finite length define isomorphic groups. It is well known that this problem is undecidable in general, but it is reasonable to ask whether this problem is decidable if the groups corresponding to  $\langle X \mid R \rangle$ ,  $\langle Y \mid S \rangle$  are known to belong to a given class of groups.

A sequence of results due to Sela, Bumagin-Kharlampovich-Miasnikov, Dahmani-Groves, Dahmani-Guirardel culminate to the decidability of the isomorphism problem in the classes of hyperbolic groups and of total relatively hyperbolic groups.

After briefly giving the general approach to the solution of the isomorphism problem in the class of relatively hyperbolic groups, I will present my joint result with François Dahmani which gives algorithmic and algebraic criteria on a class  $\mathcal{C}$  of groups which enables us to solve the isomorphism problem for torsion free relatively hyperbolic with parabolics lying in  $\mathcal{C}$ . As an application we can now solve the isomorphism problem in the class of relatively hyperbolic groups with nilpotent parabolics.