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Enric Ventura* (enric.ventura@upc.edu), EPSEM - UPC, Av. Bases de Manresa 61-73, 08242 Manresa, Barcelona, Spain. *Characterizing the solvability of the conjugacy problem in free-by-free and [free abelian]-by-free groups.*

(this is joint work with O. Bogopolski and A. Martino)

A classical construction due to Miller gave the first examples of free-by-free groups with unsolvable conjugacy problem. In this talk we shall give a characterization of the solvability of this problem within this family of groups: "a free-by-free group has solvable conjugacy problem if and only if its action group is orbit decidable". As a corollary, we obtain the solvability of the conjugacy problem for free-by-cyclic groups; and lots of new examples of free-by-free groups with unsolvable conjugacy problem.

Our characterization extends to a bigger family of groups, including [free abelian]-by-free. In this direction, we find the first known examples of [free abelian]-by-free (more concretely, Z^4 -by-free) groups with unsolvable conjugacy problem. In contrast, we also prove that every Z^2 -by-free group has solvable conjugacy problem. The case of Z^3 -by-free is open. (Received February 03, 2009)