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David Carroll, Benjamin Francisco and **Zoran Sunic***, Department of Mathematics, Roosevelt Hall, Hofstra University, Hempstead, NY 11549-0114. *Deciding if a right-angled Artin group is free-by-free is an NP-complete problem.* Preliminary report.

We show that deciding if a right-angled Artin group is free-by-free is an NP-complete problem. The work is based on an earlier result by Susan Hermiller and the third author stating that the right-angled Artin group $A\Gamma$ defined by the graph Γ is free-by-free if and only if Γ is 2-breakable (a graph Γ is 2-breakable if there exists an independent set D of vertices in Γ such that every cycle in Γ contains at least two vertices from D). We reduce the 3SAT Problem to the problem of deciding if a given graph is 2-breakable (in fact, k -breakable, for any fixed $k \geq 1$).

This is a joint work with David Carroll and Benjamin Francisco. (Received July 18, 2017)