

**Title:** *Wreath-like product groups and rigidity of their von Neumann algebras*

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**Abstract:** In this talk, I will introduce a new class of groups, called wreath-like products. These groups are close relatives of the classical wreath products and arise naturally in the context of group theoretic Dehn filling. Unlike ordinary wreath products, many wreath-like products have Kazhdan's property (T). I will present several new rigidity results for von Neumann algebras of wreath-like products with property (T). In particular, we obtain the first examples of property (T) groups  $G$  which are  $W^*$ -superrigid, in the sense that the group von Neumann algebra  $L(G)$  remembers the isomorphism class of  $G$ . We also compute the automorphism and fundamental groups of von Neumann algebras of a wide class of wreath-like products. As an application, we show every finitely presented group can be realised as the outer automorphism group of  $L(G)$  for a property (T) group  $G$ .

This is based on [joint work](#) with Ionut Chifan, Denis Osin and Bin Sun.