REPRESENTATIONS OF FINITE DIMENSIONAL POINTED HOPF ALGEBRAS OVER $\mathbb{S}_3$

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ABSTRACT. The classification of finite-dimensional pointed Hopf algebras with group $\mathbb{S}_3$ was finished in "The Nichols algebra of a semisimple Yetter-Drinfeld module", by Andruskiewitsch, Heckenberger and Schneider: there are exactly two of them, the bosonization of a Nichols algebra of dimension 12 and a non-trivial lifting. Here we determine all simple modules over any of these Hopf algebras. We also find the Gabriel quivers, the projective covers of the simple modules, and prove that they are not of finite representation type. To this end, we first investigate the modules over some complex pointed Hopf algebras defined in the papers "Examples of liftings of Nichols algebras over racks, by Andruskiewitsch and Graña and "Finite dimensional pointed Hopf algebras over $\mathbb{S}_4$", by G. García and the author, whose restriction to the group of group-likes is a direct sum of 1-dimensional modules.

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