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# SEMISIMPLICITY OF SOME DEFORMATIONS OF THE SUBGROUP CATEGORY AND THE BISET CATEGORY

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## Abstract

Working over a field of characteristic zero, the biset category is a linear category whose objects are the finite groups and whose morphisms  $G \leftarrow H$  have basis elements corresponding to conjugacy classes of subgroups of  $G \times H$ . Its composition formula resembles the composition formula for the subgroup category, whose morphisms have basis elements corresponding to the subgroups of  $G \times H$ . The biset category is not contained in the subcategory. But we shall generalize, realizing both of those categories as particular cases of some deformations, and we shall find that each deformed biset category is contained in the corresponding deformed subgroup category. We shall show that, for almost all values of the deformation parameter, the two deformed categories have a semisimplicity property. One motive is with a view to a future harnessing of the semisimplicity, treating the biset category as if it were semisimple. This is joint work with İsmail Alperen Ögüt.

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