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Henry J Tucker* (hjtucker@ucsd.edu), La Jolla, CA. *Extra special fusion categories*. Preliminary report.

The objects of fusion categories generalize properties of complex representations of finite groups. Tambara and Yamagami classified a large family of fusion categories defined by having only one non-invertible object (i.e. dimension 1) and being $\mathbb{Z}/2$ -graded with the goal of distinguishing the representation categories of the dihedral group of order 8 and the quaternion group. It was shown later by Evans and Gannon that if a category of group representations is to be Tambara-Yamagami then the group must be an extra-special 2-group. The present work is motivated similarly; we wish to understand the fusion categories whose fusion rule is like that for extra special 3-groups. This family instead has 2 non-invertible objects and is $\mathbb{Z}/3$ -graded. We begin this classification program by establishing a classification of fusion categories with fusion rules like the complex representations of the Heisenberg group over the finite field of order 3. We also consider the case where the group of invertible objects in the category forms the Klein four-group; an example of such a fusion category comes from the theory of conformal inclusions, however no such fusion category can be realized by group representations. This work is joint with Hans Wenzl and Daniel Copeland. (Received September 26, 2017)