1131-57-285 **Thomas Kerler*** (`kerler.2@osu.edu`), The Ohio State University, Department of Mathematics, 231 West 18th Avenue, Columbus, OH 43210, and **Yu Tsumura** and **Yilong Wang**. *On Dihedral Structures in $SO(m)_2$-Fusion Catgeories and Applications to TQFT.* Preliminary report.

The fusion categories associated to quantum-$SO(m)$ at level two are important non-trivial examples of weakly integral fusion categories and, as such, have gained considerable interest in topological quantum computing. One special feature is that the zero-graded parts of these categories obey the classical fusion rules of dihedral groups. In this work we identify concrete quasi-triangular structures on the group algebras of dihedral groups whose representation categories are isomorphic to these sub-categories. We go on to discuss how and extended braided Hopf algebra structure on these dihedral group rings can be used to compute $SO(m)_2$-TQFTs combinatorially, without invoking standard categorical data such as 6-j-symbols. The hope is to gain insights in finiteness and integrality properties of TQFTs based on weakly integral categories. (Received July 17, 2017)