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Alistair Savage*, Department of Mathematics & Statistics, University of Ottawa, 585 King Edward Ave, Ottawa, Ontario K1N 6N5, Canada, and **Oded Yacobi**. *Towers of algebras categorify the Heisenberg double.*

A tower of algebras is a graded algebra such that each graded piece is itself an algebra (with a different multiplication). Examples include the towers of group algebras of symmetric groups, Hecke algebras of type A , and nilcoxeter algebras. It is known that the Grothendieck groups of towers of algebras satisfying some natural conditions are Hopf algebras. We will discuss how certain induction and restriction functors on the category of modules over a tower of algebras categorify the so-called Heisenberg double of the Hopf algebra associated to that tower. In addition, we prove a Stone–von Neumann type theorem in this general setting. As special cases of our categorification theorem, we recover results of Geissinger and Zelevinsky (for the case of symmetric groups) and Khovanov (for the case of nilcoxeter algebras). For the tower of 0-Hecke algebras, we obtain a categorification of an algebra that we call the quasi-Heisenberg algebra. As an application of our Stone–von Neumann type theorem in this case, we obtain a new, representation theoretic, proof of the fact that the algebra of quasisymmetric functions is free as a module over the algebra of symmetric functions. (Received August 12, 2013)