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David Penneys* (dpenneys@math.ucla.edu), UCLA Mathematics Department, Box 951555,
Los Angeles, CA 90095-1555. *Bicommutant categories*.

I'll discuss an ongoing joint project with André Henriques. Just as a tensor category is a categorification of a ring, and its Drinfel'd center is a categorification of the center of a ring, a bicommutant category is a categorification of a von Neumann algebra. I'll define the notion of the commutant C' of a tensor category C inside an ambient tensor category B . A bicommutant category is then a category which is equivalent to its own bicommutant inside B .

Because we are interested in von Neumann algebras, we work in the ambient category $B = \text{Bim}(R)$, the tensor category of bimodules over a hyperfinite von Neumann factor R , which can be thought of as a categorification of $B(H)$. Given a unitary fusion category C inside $\text{Bim}(R)$, we identify its bicommutant C'' , which we show is, in fact, an example of a bicommutant category. Along the way, we provide machinery for constructing elements of C' , and we see the Longo-Rehren subfactor appear naturally. (Received September 02, 2015)