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Daniel Bravo, James Gillespie and Mark Hovey* (mhovey@wesleyan.edu). *Gorenstein homological algebra.*

Gorenstein homological algebra is essentially the study of modules after sending certain modules to zero. In the simplest case of modular representation theory, projective and injective modules coincide and sending them to zero gives a triangulated category called the stable module category. Such a simple plan will not work for a general ring. We show, however, that by changing one's notion of a "finite" module from finitely generated or presented to modules of type FP_∞ , we get good analogues of flat and injective modules that are well-behaved for any ring. This enables us to develop Gorenstein homological algebra and an associated triangulated stable module category in full generality. (Received September 12, 2013)