

**Title:** Modules over Gorenstein rings

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**Abstract:** The dissertation collects my actual contributions to the classification of (co)tilting modules and classes over Gorenstein rings. Compared with the original intent we get a more general result in classification of (co)tilting classes namely for general commutative noetherian rings (see the third paper in this dissertation). The dissertation consists of an introduction and three papers with coauthors. The first paper (published in *Contemp. Math.*) contains a classification of all (co)tilting modules and classes over 1-Gorenstein commutative rings. The second paper (published in *J. Algebra*) contains a classification of all tilting classes over regular rings of Krull dimension 2 and also a classification of all tilting modules in the local case. Finally the third paper (preprint) contains a classification of all (co)tilting classes and also torsion pairs over general commutative noetherian rings. All these classifications are in terms of subsets of the spectrum of the ring and by associated prime ideals of modules.

**Keywords:** (co)tilting module, (co)tilting class, torsion pair, Gorenstein ring, regular ring, commutative noetherian ring, spectrum of a ring, associated prime ideal.