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James Gillespie* (jgillesp@ramapo.edu). *Exact model structures*. Preliminary report.

Exact categories are like abelian categories. They come with short exact sequences but do not necessarily come with all kernels and cokernels. However, they come with enough limits and colimits that one can introduce homotopy theory in the usual way via Quillen model structures. As in the abelian case such model structures correspond to cotorsion pairs and the examples include all the varieties of relative homological algebra that we regularly see. Some interactions between the model structures and the cotorsion pairs with particular emphasis on exact categories will be explored in this talk. (Received January 16, 2011)