1046-55-160      **James R. Gillespie\*** (`jrg21@psu.edu`). *Gorenstein model structures and generalized derived categories.*

We will see how the derived category of a ring can be constructed using Gorenstein homological algebra. Furthermore, this approach points to a theory of generalized derived categories. The method is to put a model structure on the category of graded $S[x]/(x^2)$-modules where $S$ is a Gorenstein ring. Taking $S$ to be the integers, the model structure can then be lifted to $R[x]/(x^2)$-modules where $R$ is any ring. Its homotopy category recovers the derived category of $R$. By replacing $S[x]/(x^2)$ with other graded Gorensein rings, we are led to various generalizations of the usual derived category. We will give examples involving double complexes, and what we call $k$-chain complexes. (Received August 08, 2008)