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Orlov Spectra of Categories Arising in Mirror Symmetry.

A simple question to ask about an object, G , in a triangulated category, \mathcal{T} , is the following: can every other object be built from G using cones, shifts, finite coproducts, and splitting of summands? If the answer is yes, then G is called a generator of \mathcal{T} . If G is a generator, then a natural follow-up question is: how many cones do we have use? In particular, is there a uniform bound? The minimal upper bound is called the generation time of G . To \mathcal{T} , we can associate a subset of \mathbf{N} which records the generation times of all generators of \mathcal{T} . It is called the Orlov spectrum of \mathcal{T} . In this talk, we will take some categories of interest in mirror symmetry and discuss the structure of their Orlov spectra. Upper and lower bounds for the Orlov spectrum will be tied closely to geometry and relations with questions of rationality will be discussed. Examples to be considered include: Calabi-Yau hypersurfaces in projective space, Riemann surfaces, and isolated hypersurface singularities. (Received September 13, 2010)