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*The Griffiths-Dwork algorithm for toric hypersurfaces*

The variation of complex structure for a family of Calabi-Yau varieties is encoded in a differential equation called the Picard-Fuchs equation. We develop computational methods for studying properties of Calabi-Yau varieties realized as hypersurfaces in toric varieties, and implement an algorithm for computing their Picard-Fuchs equations. We apply our methods to study highly symmetric families of K3 surfaces. This talk describes joint work with Dagan Karp, Jacob Lewis, Daniel Moore, and Dmitri Skjorshammer.