

Quadratic counts of twisted cubic curves on hypersurfaces and complete intersections in a projective space

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Early on in the development of Gromov-Witten theory, Ellingsrud and Strømme computed the number of twisted cubic curves on hypersurfaces and complete intersections of appropriate (multi-)degree. With Sabrina Pauli, we adapt their method to give a refinement to a “count” landing in the Grothendieck-Witt ring of quadratic forms; the rank recovers the classical count, while the signature gives a lower bound for the number of real twisted cubics in a real hypersurface/complete intersection of suitable (multi-)degree. The signature for the case of the quintic threefold agrees with the Ooguri-Vafa invariant computed as a weighted count of holomorphic maps of disks, due to Pandharipande-Solomon-Walcher, but we do not have any explanation for this identity. We will give some background on the theory of quadratic enumerative geometry, and explain the main ingredients going into our computation.

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