

Algebraic Geometry Seminar

Enumerative formulas for Hilbert schemes of points on surfaces

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Abstract: The Hilbert schemes of points on a smooth algebraic surface are smooth varieties that parametrize finite closed subschemes of the surface of a fixed length. When the underlying surface is toric, global sections of line bundles on the surface correspond to integer points in an associated polygon. In this talk, I will explain how in certain cases the corresponding problem on the Hilbert scheme can be interpreted as a packing problem for integer points in the same polygon satisfying a certain separation condition. Such an interpretation is known for all ample line bundles on Hilbert schemes of points on Hirzebruch surfaces (for example $\mathbb{P}^1 \times \mathbb{P}^1$) and is expected to hold more generally. Based on this counting interpretation for sections of ample line bundles, I will also give formula for the Euler characteristic of any line bundle on the Hilbert schemes of points on $\mathbb{P}^1 \times \mathbb{P}^1$. The latter formula has applications to the Verlinde series introduced by Ellingsrud, Göttsche, and Lehn.

Monday, October 14 at 3:00 PM in 636 SEO