

A vanishing theorem for symmetric powers of tautological bundles on Hilbert schemes of points over a surface.

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Abstract:

Let X be a smooth complex projective surface and let $X[n]$ be the Hilbert scheme of n points over X . If L is a line bundle over X , we can associate to L a natural vector bundle on $X[n]$, called the tautological vector bundle, which we will indicate with $L[n]$. In this talk we will discuss the structure of symmetric powers $S^k L[n]$ of tautological bundles on Hilbert schemes of points and conditions for the vanishing of their cohomology, at least for $k=3,4$, and in case they are twisted by other natural positive line bundles on $X[n]$. We will also have a glimpse of the hoped results and problems of the general case.