

Characteristic classes of Hilbert schemes of points via symmetric products

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We obtain a formula for the generating series of (the push-forward under the Hilbert-Chow morphism of) the Hirzebruch homology characteristic classes of the Hilbert schemes of points for a smooth quasi-projective variety of arbitrary pure dimension. This result is based on a geometric construction of a motivic exponentiation generalizing the notion of motivic power structure, as well as on a formula for the generating series of the Hirzebruch homology characteristic classes of symmetric products. We apply the same methods for the calculation of generating series formulae for the Hirzebruch classes of the push-forwards of "virtual motives" of Hilbert schemes of a threefold. As corollaries, we obtain counterparts for the MacPherson (and Aluffi) Chern classes of Hilbert schemes of a smooth quasi-projective variety (resp. for threefolds). For a projective Calabi-Yau threefold, the latter yields a Chern class version of the dimension zero MNOP conjecture.

Comments: comments are welcome

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