

Moduli of Distributions via Singular Schemes

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Let X be a smooth projective variety with $\text{Pic}(X) \simeq \mathbb{Z}$. We show that the map that sends a codimension one distribution on X to its singular scheme is a morphism from the moduli space of distributions into a Hilbert scheme. We describe its fibers and, when $X = \mathbb{P}^n$, compute them via syzygies. As an application, we describe the moduli spaces of degree 1 distributions on \mathbb{P}^3 .