Seminar on Moduli Theory

Lecture 12

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Last Week

1. Fine and Coarse moduli space
2. The Hilbert and Quot functors

Theorem (Grothendieck)

Let $\pi : X \to S$ be a projective morphism with S Noetherian. Then for any coherent sheaf E on X and any polynomial $\phi \in \mathbb{Q}[t]$, the functor $\mathfrak{Quot}^{\phi(t)}_{E/X/S}$ is representable by a projective S-scheme.

$\mathfrak{Quot}^1_{\oplus^{n+1}\mathcal{O}_{\mathbb{Z}}/\mathbb{Z}/\mathbb{Z}}$

Moduli of hypersurfaces

Lines in the plane

Moduli of finite locally free covers

Finite group actions and the Hilbert functor of points

Hironaka's example