

# Seminar on Moduli Theory

## Lecture 13

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# Last Week

- ① Schemes of (auto)morphisms
- ② Grassmannian scheme
- ③ Plücker embedding

# Grassmannian scheme

$$\mathrm{Quot}_{\oplus^r \mathcal{O}_{\mathbb{Z}}/\mathbb{Z}/\mathbb{Z}}^d \text{ for } 1 \leq d \leq r$$

# Grassmannian of a vector bundle

## Grassmannian of a coherent sheaf $G(E, d)$

$G(E, d)$  is projective

## Theorem (Grothendieck)

*Let  $\pi : X \rightarrow S$  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  $\mathrm{Quot}_{E/X/S}^{\phi(t)}$  is representable by a projective  $S$ -scheme.*

Idea of proof



# Idea of proof