CHANGO KEEM, Seoul National University

Irreducibility and components rigid in moduli of the Hilbert scheme of smooth curves

Denote by \( \mathcal{H}_{d,g,r} \) the Hilbert scheme of smooth curves, which is the union of components whose general point corresponds to a smooth irreducible and non-degenerate curve of degree \( d \) and genus \( g \) in \( \mathbb{P}^r \). A component of \( \mathcal{H}_{d,g,r} \) is rigid in moduli if its image in the moduli space \( \mathcal{M}_g \) of smooth curves of genus \( g \) under the natural map \( \pi : \mathcal{H}_{d,g,r} \rightarrow \mathcal{M}_g \) is a one point set.

In this talk, we discuss about the non-existence of a component rigid in moduli for \( g > 0 \) and \( r = 3 \). In case \( r \geq 4 \), we also discuss about the non-existence of a component of \( \mathcal{H}_{d,g,r} \) rigid in moduli in a certain restricted range of \( d, g > 0 \) and \( r \geq 4 \).

In the course of the discussion, we establish the irreducibility of \( \mathcal{H}_{d,g,3} \) beyond the range which has been known before.