Regular and superabundant components of the Hilbert scheme of smooth projective curves

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Denote by $\mathcal{I}_{d,g,r}$ the union of irreducible components of the Hilbert scheme whose general points correspond to smooth integral non-degenerate complex curves of genus g and degree d in $\mathbb{P}^r$. Assume that $\rho(d,g,r) := g - (r+1)(g-d+r) \geq 0$. In 1921 Severi conjectured that if $d \geq g + r$ then $\mathcal{I}_{d,g,r}$ is irreducible. However, in the 1980's Ein and Keem gave counterexamples to the claim when $r \geq 6$. In fact, it turned out that the geometry of $\mathcal{I}_{d,g,r}$ is more diverse. I will show the existence of additional generically smooth superabundant components and the existence of at least two regular components.

The talk is based on joints works with Y.Choi and S.Kim.