ZURICH GRADUATE COLLOQUIUM

Tuesdays, 5:15 pm
Hermann Weyl Zimmer, ETH Zentrum
in alternation with the
Zurich Colloquium in Mathematics

Speaker: **Stefan Fumasoli** (University of Zurich)

Title: **Connectedness of Hilbert scheme strata defined by bounding cohomology**

Date: Tuesday, November 23

Let $Hilb^p_K$ be the Hilbert scheme parametrizing the closed subschemes of $\mathbb{P}^n_K$ with Hilbert polynomial $p \in \mathbb{Q}[t]$ over a field K. In 1963 R. Hartshorne showed that $Hilb^p_K$ is connected. Since then several connectedness results concerning interesting topological subspaces of the Hilbert scheme have been proven.
By bounding below the cohomological Hilbert functions of the points of $Hilb^p_K$ we define locally closed subspaces of the Hilbert scheme. In the talk we give a sketch of the proof that these subspaces are connected if $char K = 0$. Indeed, they are connected by Groebner deformations. To show this we translate the problem into an algebraic context and exploit the combinatorial methods of D. Mall.

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