

## SEMINARIO DI GEOMETRIA

17 Maggio 2013, h.14.00-15.00

Dipartimento di scienze Matematiche,  
Politecnico di Torino,  
AULA BUZANO

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### On the geometry of the Gorenstein locus of the Hilbert scheme of points in $\mathbb{P}^n$

The Gorenstein locus of the Hilbert scheme of  $k$  points in  $\mathbb{P}^n$ , denoted  $\text{Hilb}_k^G(\mathbb{P}^n)$ , has good geometrical properties and is important for the study of cactus and secant varieties of Veronese embeddings.

It was proved by A. Iarrobino that  $\text{Hilb}_{14}^G(\mathbb{P}^n)$  is reducible for  $n \geq 6$ . I will sketch a proof of irreducibility of  $\text{Hilb}_k^G(\mathbb{P}^n)$  for  $k \leq 13$  and any  $n$ , concentrating on the use of the local Hilbert function and on the importance of finding large irreducible loci.

This is a joint work with G. Casnati and R. Notari.