Quartic forms in 37 variables

Abstract:
A projective variety $X$ defined over the rational numbers is said to satisfy the Hasse principle if the presence of an adelic point on $X$ guarantees the presence of a rational point. We prove that a smooth quartic hypersurface $X$ over $\mathbb{Q}$ satisfies Hasse Principle as long as the number of variables are greater than or equal to 37. The key ingredient is Kloosterman type extra averaging in conjunction with the van der Corput differencing applied to estimate the "minor arc contribution" in the Hardy-Littlewood circle method. This is a joint work with Oscar Marmon.

All are cordially invited.