

In this talk we will discuss some new developments in higher moment sums of 1-parametric families of elliptic curves. These sums have connections to modular forms and algebraic curves. I will sketch a result about the second moment of cubic curves leading to a connection with intermediate Jacobians in threefolds. Next we will discuss proofs of modularity of certain rigid Calabi-Yau threefolds which uses directly higher moments, universal families of elliptic curves and Deligne's results, avoiding completely the standard approach via Faltings-Serre method.