Gromov-Witten theory of K3 surfaces

Abstract:

I will discuss the enumeration of curves on K3 surfaces: both the classical roots in projective geometry and the modern successes (connected to modular forms). How many tri-tangent planes does a quartic surface have? The answer, when appropriately counted, is 3200 – the q^2 coefficient of Fourier expansion of the inverse of the discriminant modular form. This connection was first noticed by Yau and Zaslow in 1995. In the last two decades, all such counting questions for K3 surfaces have been connected to modular forms. I will present both the results and the open directions in the subject.

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