

SPEAKER: Detchat Samart (Texas A&M University)

TITLE: Mahler measures of hypergeometric families of Calabi-Yau varieties

ABSTRACT: The (logarithmic) Mahler measure of an n -variable Laurent polynomial P is defined by

$$m(P) = \int_0^1 \cdots \int_0^1 \log |P(e^{2\pi i\theta_1}, \dots, e^{2\pi i\theta_n})| d\theta_1 \cdots d\theta_n.$$

In some certain cases, Mahler measures are known to be related to special values of L -functions. We will present some new results relating the Mahler measures of polynomials whose zero loci define elliptic curves, $K3$ surfaces, and Calabi-Yau threefold of hypergeometric type to L -values of elliptic modular forms. A part of the talk is joint work with Matt Papanikolas and Mat Rogers.