SIVA NAIR, Université de Montréal

The Mahler measure of some polynomial families

The Mahler measure of a polynomial $P(x_1, x_2, \ldots, x_n)$ is the average value of $\log|P|$ along the unit n-torus $\mathbb{T}^n$ defined by $|x_i| = 1$ for all i. Interest in this quantity arose from the fact that the Mahler measure of certain polynomials is quite remarkable and not just any random real number – they evaluate to special values of L-functions! However, in general, it is very difficult to evaluate Mahler measures of multivariable polynomials. In this talk, we will consider some families of polynomials that contain, for every integer $n > 1$, an n-variable polynomial. We will discuss how the structure of these polynomials lets us compute their Mahler measures as combinations of values of the Riemann zeta function and values of certain Dirichlet L-functions. This talk includes joint work with Matilde Lalín and Subham Roy.