Applications of Umbral Calculus and The Riordan Group

Shaun Sullivan

Florida Gulf Coast University

Location: MH-107

Tuesday, February 21, 4:00 pm-4:30 pm

Mathematics Seminar

Abstract:

The ballot numbers count paths that stay weakly above the diagonal $y = x$, start at the origin, and take steps from the set $\{\uparrow, \rightarrow\} = \{u, r\}$. Those ending on the diagonal can be viewed as Dyck paths. We show two approaches to counting these paths that avoid certain patterns. Depending on the type of pattern, the solution to enumerating these paths can be viewed as a sequence of polynomials, the objects of Umbral Calculus, or a Riordan matrix, the objects of the Riordan Group.