

1145-05-1500 **Paul Barry*** (pbarry@wit.ie), School of Science, Waterford Institute of Technology, Waterford, X91 K0EK, Ireland. *Generalized Catalan Numbers Associated with a Family of Pascal-like Triangles*. Preliminary report.

We find closed-form expressions and continued fraction generating functions for a family of generalized Catalan numbers associated with a set of Pascal-like number triangles that are defined by Riordan arrays. We express these generalized Catalan numbers as the moments of appropriately defined orthogonal polynomials. We also describe them as the row sums of related Riordan arrays. Links are drawn to the Narayana numbers and to lattice paths. We further generalize this one-parameter family to a three-parameter family. We use the generalized Catalan numbers to define generalized Catalan triangles. We define various generalized Motzkin numbers defined by these general Catalan numbers. Finally we indicate that the generalized Catalan numbers can be associated with certain generalized Eulerian numbers by means of a special transform. (Received September 22, 2018)