1163-33-1658   **Ian Marquette**, **Sarah Post*** (`spost@hawaii.edu`) and **Lisa Ritter**. *Exceptional Orthogonal Polynomials and rational solutions of Painlevé Equations.*

Exceptional orthogonal polynomials (EOP), classical orthogonal polynomials with gaps in their degree, have recently been the subject of flourishing new research connected to classical, univariate orthogonal polynomials. One area in particular is the connection between rational solutions to Painlevé equations and EOPs. In this presentation, we will discuss the connection between exceptional Hermite polynomials and rational solutions to the fourth Painlevé equation, which was previously known, and then extend the method to the sixth Painlevé equation via exceptional Jacobi polynomials. Throughout, we will see how superintegrable Hamiltonian systems and polynomial algebras play a role. (Received September 16, 2020)