

Abstract Submitted  
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**Generalized Adler-Moser and Loutsenko polynomials and point vortex equilibria** NICHOLAS COX-STEIB, KEVIN O'NEIL, University of Tulsa — The Adler-Moser polynomials, well-known as generators of rational solutions to the Korteweg-de Vries equation, also have an “electrostatic interpretation” in which the zeroes of the polynomials form equilibrium configurations of point vortices of equal and opposite strengths. The Loutsenko polynomials similarly form equilibria of vortices with strength ratio -2. The present work describes a new family of polynomials that generalizes the aforementioned polynomials by introducing a third vortex strength. This new doubly-indexed family has many of the unusual characteristics of the two-strength polynomials such as the presence of continuous parameters and a connection to rational potentials for a second-order partial differential equation, and reproduces the earlier polynomials when the third strength is set to zero.

Kevin O'Neil  
University of Tulsa

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