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Robert Buckingham* (buckinrt@uc.edu), Department of Mathematical Sciences, University of Cincinnati, PO Box 210025, Cincinnati, OH 45221-0025, and **Peter D. Miller**. *Asymptotics of rational Painleve II functions.*

Rational solutions of the nonhomogenous Painleve II equation have recently been discovered to have applications to fluid vortices, theoretical physics, and nonlinear wave equations. Clarkson and Mansfield observed numerically that the zeros and poles of these rational solutions appear to have a remarkably regular triangular structure. We prove that as the nonhomogeneity parameter tends to infinity the scaled zeros and poles fill out a certain curvilinear triangular region in the complex plane. We also discuss progress on computing the leading-order asymptotic behavior of the rational solutions inside, outside, and at the edge of this root region. This is joint work with Peter Miller. (Received September 11, 2012)