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**Peter A Clarkson\*** (P.A.Clarkson@kent.ac.uk), Institute of Maths, Stats & Act. Sci.,  
University of Kent, Canterbury, CT2 7NF, England. *Asymptotics and Connection Formulae for  
the Painlevé Equations.*

The six Painlevé equations were first discovered around the beginning of the twentieth century by Painlevé, Gambier and their colleagues in an investigation of nonlinear second-order ordinary differential equations. Recently there has been considerable interest in the Painlevé equations primarily due to the fact that they arise as reductions of the soliton equations which solvable by inverse scattering. Although first discovered from strictly mathematical considerations, the Painlevé equations have arisen in a variety of important physical applications including statistical mechanics, random matrices, plasma physics, nonlinear waves, quantum gravity, quantum field theory, general relativity, nonlinear optics and fibre optics. Further the Painlevé equations may be thought of a nonlinear analogues of the classical special functions.

In this talk I shall discuss asymptotics and connection formulae for the Painlevé equations. In particular I shall exhibit some new monotonically increasing and monotonically decreasing solutions of the second Painlevé equation. (Received August 15, 2007)