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Peter D. Miller* (millerpd@umich.edu), Dept. of Mathematics, University of Michigan, East Hall, 530 Church St., Ann Arbor, MI 48109. *Special Functions and Universal Behavior in Integrable Systems.*

An integrable system is a mathematical problem that can be analyzed with great precision because some hidden structure is present, making the problem rather unexpectedly tractable. The most famous examples include the initial-value problems for the Korteweg-de Vries and nonlinear Schrödinger equations, nonlinear partial differential equations governing many interesting physical processes. In recent years it has been understood, using the full power of integrability, that in certain natural asymptotic limits the solutions of these (and other) equations behave in a universal way that is independent of the initial conditions. The universal behavior that appears is in every case given in terms of special function. This talk will be an introductory survey of some of these new results designed for an undergraduate audience. (Received September 17, 2010)