1100-33-355 **Robert S. Maier*** (rsm@math.arizona.edu), Department of Mathematics, University of Arizona, Tucson, AZ 85721. *Three-dimensional quadratic differential systems and the Painlevé property.*

A finite-dimensional nonlinear differential system is a system of coupled nonlinear ordinary differential equations. The solutions of such a system cannot necessarily be expressed in terms of elementary or (known) higher transcendental functions, even if the nonlinearities are of the seemingly simple quadratic type. Interesting three-dimensional quadratic systems include (i) generalized Darboux–Halphen systems and (ii) 3-species Lotka–Volterra systems. Solving either can be reduced to solving a certain nonlinear third-order scalar ODE, which we call a generalized Schwarzian equation. By appealing to a partial classification of third-order ODEs with the Painlevé property, due to C. Carton-LeBrun, we can characterize the parameter values for which our systems have the property. Moreover, we can integrate any such system in terms of elementary or elliptic functions, or Painlevé transcendents. Quadratic differential systems with invariant curves of genus greater than unity lie outside this classification, and remain to be treated. (Received February 10, 2014)