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Paul Bracken* (bracken@panam.edu), Department of Mathematics, University of Texas, 1201 W University Dr., Edinburg, TX 78541. *Partial Differential Equations which Admit Integrable Systems*. Preliminary report.

The relationship between solutions of the sinh-Laplace equation and the determination of various kinds of surfaces of constant Gaussian curvature, both positive and negative, will be discussed. The fundamental equations of surface theory are found to yield a type of geometrically based Lax pair. Some results related to the problem of identifying whether a given nonlinear partial differential equation admits a linear integrable system are presented using a differential forms approach. (Received July 07, 2005)