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**Matthew J. Gursky\*** (mgursky@nd.edu), Department of Mathematics, 255 Hurley Building, Notre Dame, IN 46556. *Origins and Applications of some Nonlinear Equations in Conformal Geometry.*

Nonlinear equations appear naturally in differential geometry, for example when studying the curvature of hypersurfaces in Euclidean space. Indeed, many of the fundamental advances in the theory of partial differential equations in the last century were inspired by considering very concrete problems in geometry.

Over the last five or ten years there has been considerable interest in certain fully nonlinear equations in *conformal* geometry. These equations arise when considering "uniformization" problems in higher dimensions. After describing some classical examples, I will explain the origin of these new equations and describe some interesting applications. (Received June 19, 2007)