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Nonlinear Differential Equations in Geometry

We will discuss some recent progress of nonlinear differential equations arising in geometry. Geometrically inspired problems provided the motivation for much of the development of the modern theory of nonlinear PDEs, in turn, the PDE theory plays key role in solving some outstanding problems in geometry. We will concentrate on nonlinear scalar equations to illustrate some of the main ideas and techniques. These equations are related to the Christoffel–Minkowski problem, high codimension mean curvature flow and the problem of prescribing the σ_k curvature of a conformal metric.