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Convexity of solutions of fully nonlinear PDEs

We discuss some recent works on the existence of convex solutions of certain fully nonlinear equations associated to problems in differential geometry. In particular, we will discuss the problem of prescribing symmetric functions of principal radii on the outer normals of convex hypersurfaces (Christoffel-Minkowski problem) and prescribing Weigarten curvature problem after the work of Caffarelli-Nirenberg-Spruck in 1980s.