ON A CLASS OF GEOMETRIC PDE'S: THE PRESCRIBED LEVI CURVATURE EQUATIONS

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ABSTRACT. We give a survey about some notions of curvatures associated with pseudoconvexity and Levi form the way the classical Gauss and Mean curvatures are related to the convexity and to the Hessian matrix.
We shall first show that these curvature equations contain information about the geometric feature of a closed hypersurface.
Then, we shall show that the curvature operators lead to a new class of second order fully nonlinear equations which are not elliptic at any point.
However, they have the following redeeming feature: the missing ellipticity direction can be recovered by suitable commutation relations.
We shall use this property to study the Dirichlet problem for graphs with prescribed Levi curvature.