

# TOWARDS A THEORY OF PDE'S OF MIXED ELLIPTIC-HYPERBOLIC TYPE

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**Abstract:** PDE's of mixed (elliptic-hyperbolic) type arise in many problems in Differential Geometry. So leads the problem of isometrically embedding  $(M^2, g)$  into  $\mathbb{R}^3$  to a quasilinear PDE which is elliptic for  $K_g > 0$  and hyperbolic for  $K_g < 0$ . There are well-established theories for elliptic PDE's as well as for (strictly) hyperbolic ones. In contrast, having both types simultaneously occurring in one and the same equation causes tremendous analytical difficulties (regarding suitable boundary conditions, the regularity of solutions, etc.).

In the talk, I will survey some of these problems and outline possible ways to deal with them.