Integral inequalities for solutions of some partial differential equations *)

by

Roman Dwilewicz

Centre de Recherches Mathematiques, Univ. de Montreal, C.P. 6128, Succursale A Montreal, Quebec, CANADA H3C 3J7

There are many papers and monographs devoted to the maximum principle for solutions of partial differential equations (pdes) or systems of pdes (see for example [PW], [Sp]). If a system of pdes is linear, then, in some cases, a nice geometric interpretation of the maximum principle can be given. The purpose of the talk is to give some properties, from the maximum principle point of view, of solutions of a linear pde in two or three real variables.

Formulation of problems. Let M be a smooth, paracompact, separable manifold, $\dim_{\mathbb{R}} M = m$, with a distinguished ℓ - dimensional complex subbundle H of $\mathbb{C}T(M)$. In the following we assume that the bundle H is formally integrable, i.e. is closed with respect to the Poisson bracket.

Denote by S_H the space of smooth functions u on M annihilated by all sections of the bundle, which means, in local coordinates $(x_1,\ldots,x_m)$ on U, $U \subset M$, that u satisfies the system

---

*) A summary of the talk given during the 10th Summer Symposium in Real Analysis, The University of British Columbia, Vancouver, Canada, July 27 - 30, 1986.