Asymptotic analysis of fundamental solutions of hypoelliptic equations

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Radiation conditions were first derived by A. Sommerfeld for Helmholtz operator [1] and subsequently were generalized in the following papers [2], [3]. Here are obtained Sommerfeld type conditions at infinity for polymetaharmonic equations, which ensure uniqueness of solutions in $\mathbb{R}^n$. In the paper [2] is studied uniqueness of solution of the polymetaharmonic equation, where characteristic polynomial has multiple zeros. In the monograph [4] were obtained radiation conditions for hypoelliptic differential equations, where characteristic polynomials have real simple zeros.

We generalize the results obtained in [4] and consider the case when the corresponding characteristic polynomials of the hypoelliptic differential equations have real multiple zeros. We investigate asymptotic properties at infinity of fundamental solutions of the hypoelliptic differential equations. On the basis of asymptotic analysis of fundamental solution we find conditions at infinity, which ensure that these equations are uniquely solvable.

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References


