

**ON THE CAUCHY AND MULTI-POINT PROBLEMS
FOR PARTIAL PSEUDO-DIFFERENTIAL EQUATIONS
OF FRACTIONAL ORDER**

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Abstract

This paper is devoted to the Cauchy and multi-point value problems for partial pseudo-differential equations of fractional order. The used pseudo-differential operators are associated with the symbols which may have singularities. The solvability theorems for these problems in the space $\Psi_{G,p}(\mathbb{R}^n)$, $1 < p < \infty$, of functions in L_p whose Fourier transforms are compactly supported in a domain $G \subset \mathbb{R}^n$ and in its dual space $\Psi'_{-G,q}(\mathbb{R}^n)$, $q = p/(p - 1)$, are proved. The representations of the solutions in terms of pseudo-differential operators are constructed. With the help of these representations some of properties of solutions are proved. The obtained results are then used to get solvability theorems in the Sobolev spaces $H^s(\mathbb{R}^n)$, $s \in \mathbb{R}$.

Mathematics Subject Classification: 26A33, 45K05, 35A05, 35S10, 35S15, 33E12

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