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BOUNDARY VALUE PROBLEMS IN OSCILLATING CUSPIDAL WEDGES

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ABSTRACT. The paper is devoted to pseudodifferential boundary value problems in domains with cuspidal wedges. We show a criterion for the Fredholm property of a boundary value problem and derive estimates of solutions close to edges.

1. Introduction. Boundary value problems in domains (or on manifolds) with singular boundary appear in numerous models of applied sciences, in particular, in mechanics, crack theory, hydrodynamics, mathematical physics. Many authors contributed to the corresponding theory under different aspects, especially Kondrat'ev [**19**], Grisvard [**12**], Maz'ya and Plamenevskii [**23, 24**], Feigin [**8, 9**], Bagirov and Feigin [**1**], Maz'ya, Kozlov and Roßmann [**22**], Nazarov and Plamenevskii [**28**].

In recent years the interest in such problems increased enormously, and new structure insight was obtained by applying pseudodifferential methods, cf., in particular, Melrose and Mendoza [**27**], Rabinovich [**31, 32**], Schrohe and Schulze [**35, 36**], Mazzeo and Melrose [**26**].

Some general ideas are the same as in the classical theory for smooth domains, cf. Boutet de Monvel [**3, 4**], for instance, to embed the differential boundary value problems into an algebra of operators in which the parametrices of elliptic elements can be expressed.

A typical feature of these theories is that a given fixed, say differential, boundary value problem generates a hierarchy of symbols whose components are operator-valued and consist of parametrized operators in the corresponding algebras on spaces of lower order singularity. For the smooth case and pseudodifferential operators with the transmission property this is the interior symbolic structure and the boundary symbolic calculus on the half-axis. For operators in the sense of Vishik and Eskin [**6, 44**] there appear more general singular integral operators on

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