STURM–LIOUVILLE PROBLEMS
IN WEIGHTED SPACES IN DOMAINS
WITH NONSMOOTH EDGES. II

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We consider a (generally, noncoercive) mixed boundary value problem in a bounded domain $\mathcal{D}$ of $\mathbb{R}^n$ for a second order elliptic differential operator $A(x, \partial)$. The differential operator is assumed to be of divergent form in $\mathcal{D}$ and the boundary operator $B(x, \partial)$ is of Robin type on $\partial\mathcal{D}$. The boundary of $\mathcal{D}$ is assumed to be a Lipschitz surface. Besides, we distinguish a closed subset $Y \subset \partial\mathcal{D}$ and control the growth of solutions near Y. We prove that the pair (A, B) induces a Fredholm operator L in suitable weighted spaces of Sobolev type, the weight function being a power of the distance to the singular set Y. Moreover, we prove the completeness of root functions related to L.

Key words and phrases: mixed problems, noncoercive boundary conditions, elliptic operators, root functions, weighted Sobolev spaces.

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