

The Coerciveness Problem for Linear Elliptic PDE

Abstract: Coerciveness of quadratic integro-differential forms on the boundary for solutions leads to solvability of Neumann problems in the strong nontangential sense. These inequalities seem to be available only for a subset of the linear differential operators that can be written as sums of squares of differential operators. Formulated in certain ways they imply classical interior coerciveness over Sobolev spaces without boundary conditions, where again the inequalities seem to be true in Lipschitz domains only for the same subset. For example, a sums of squares elliptic operator will be displayed that has no formally positive interior coercive form. In smooth domains it does have a coercive form that is not formally positive.