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The Agmon-Douglis-Nirenberg Problem for Dynamic Boundary Conditions

Of concern are certain reaction-diffusion systems with total mass bounded in the L^1 norm. The solution of this problem requires new results from the study of a linear uniformly parabolic heat equation on a bounded domain with dynamic (or Wentzell) boundary conditions incorporating the Laplace-Beltrami operator. We prove that the semigroup governing this problem is analytic in the right half plane in L^p for all $p \geq 1$ and for C in the supremum norm. The proof is long and delicate. This is joint work with Gisele Ruiz Goldstein and Michel Pierre.