

Engel, Klaus-Jochen

The Laplacian on $C(\overline{\Omega})$ with generalized Wentzell boundary conditions. (English)

Zbl 1064.47043

Arch. Math. 81, No. 5, 548-558 (2003).

Let $\Omega \subset \mathbb{R}^m$ be a bounded regular domain and consider on $C(\overline{\Omega})$ the operator

$$Af = \Delta f$$

with domain

$$\left\{ f \in C_n^1(\overline{\Omega}) : \Delta f + \beta \frac{\partial f}{\partial n} + \gamma f = 0 \text{ on } \partial\Omega \right\}.$$

Operators of this type appear usually in abstract Cauchy problems coming from Markov processes and have received a lot attention in recent years. In the paper under review, the author shows that this operator generates an analytic semigroup of angle $\frac{\pi}{2}$ in the space $C(\overline{\Omega})$ for every positive β and every continuous γ . The methods of the proof are functional analytic. Using similarity transforms, the author is able to treat the boundary conditions as an additive perturbation of the Laplacian with Dirichlet boundary conditions.

Reviewer: [Andras Batkai \(Roma\)](#)

MSC:

[47D06](#) One-parameter semigroups and linear evolution equations
[35J25](#) Boundary value problems for second-order elliptic equations

Cited in **1** Review
Cited in **27** Documents

Keywords:

[analytic semigroups](#); [sectorial operators](#); [Laplacian](#); [Wentzell boundary condition](#)

Full Text: [DOI](#)