

**Egorov, Yu. V.; Kondrat'ev, V. A.**

**On the negative spectrum of an elliptic operator.** (English. Russian original) Zbl 0734.35063  
Math. USSR, Sb. 69, No. 1, 155-177 (1991); translation from Mat. Sb. 181, No. 2, 147-166 (1990).

The authors deal with the even order elliptic operator

$$L = \sum_{|\alpha| \leq m, |\beta| \leq m} D^\alpha (a_{\alpha\beta}(x) D^\beta u) - V(x)$$

with measurable coefficients for which  $a_{\alpha\beta} = \bar{a}_{\beta\alpha}$  and

$$\sum_{|\alpha| \leq m, |\beta| \leq m} \int a_{\alpha\beta}(x) D^\alpha u \overline{D^\beta u} dx \geq c_0 \int \sum_{|\alpha| \leq m} |D^\alpha u|^2 dx$$

for  $u \in C_0^\infty$ ,  $c_0 > 0$ . The operator  $L$  is considered in the whole space  $\mathbb{R}^n$  or in the domain  $\Omega$  with weak zero Dirichlet conditions on the boundary.

Using the dimensionless embedding theorems, the authors derive new sharp estimations for the number of points in the negative spectrum for the operator  $L$ . These results concern degenerate elliptic operators, unbounded domains  $\Omega$  and the case in which the spectrum of  $L$  has an infinite number of real negative points. The present theorems generalize previous results of the authors, G. V. Rosenbloom, E. Lieb and others.

Reviewer: V. Ďurikovič (Bratislava)

**MSC:**

[35P20](#) Asymptotic distributions of eigenvalues in context of PDEs  
[35J30](#) Higher-order elliptic equations

Cited in **1** Review  
Cited in **2** Documents

**Keywords:**

even order elliptic operator; embedding theorems; negative spectrum; degenerate elliptic operators

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