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Binomial asymptotics of the spectrum of a boundary-value problem. (English. Russian original)

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Funct. Anal. Appl. 17, 309-311 (1983); translation from Funkts. Anal. Prilozh. 17, No. 4, 79-81 (1983).

Consider the elliptic boundary value problem of order 2m:

$$(*) \quad Au(x) = \lambda u(x) \quad on \quad \Omega \subseteq \mathbb{R}^n, \quad Bju(x) = 0 \quad on \quad \Gamma = \partial\Omega.$$

Suppose (*) is self- adjoint, semi bounded below and let N(λ) be the distribution function of (*). In this paper the author extends previous results of V. Y. Ivrii:

$$N(\lambda) = \gamma\lambda^{n/2m} + O(\lambda^{(n-1)/2m}); \quad \lambda \to +\infty$$

where γ is the usual constant. Furthermore under a condition on the Hamiltonian flow for the symbol of A he proves

$$N(\lambda) = \gamma\lambda^{n/2m} + o(\lambda^{(n-1)/2m}); \quad \lambda \to +\infty.$$

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MSC:

35P20 Asymptotic distributions of eigenvalues in context of PDEs
35J40 Boundary value problems for higher-order elliptic equations
35A07 Local existence and uniqueness theorems (PDE) (MSC2000)

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