

[Yurinsky, V. V.](#)

Localization of spectrum bottom for the Stokes operator in a random porous medium.

(English. Russian original) [Zbl 0970.35102](#)

[Sib. Math. J. 42, No. 2, 386-413 \(2001\)](#); translation from [Sib. Mat. Zh. 42, No. 2, 451-483 \(2001\)](#).

The article is devoted to the spectral theory for the Stokes operator in a random porous medium. The author exposes a series of theorems which assert that the principal eigenvalue of the Stokes system

$$\Delta U - \nabla p + f = 0, \quad \nabla \cdot U = 0$$

on a random subdomain of a cube with edge r has the order $O(\ln^{-2/d} r)$ with probability arbitrarily close to unity. A determinate interval is also indicated which contains this random variable with probability arbitrarily close to unity.

Reviewer: [V.Grebenev \(Novosibirsk\)](#)

MSC:

[35Q30](#) Navier-Stokes equations

[35P15](#) Estimates of eigenvalues in context of PDEs

[60H30](#) Applications of stochastic analysis (to PDEs, etc.)

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Keywords:

[Stokes operator](#); [random porous medium](#); [spectral theory](#); [principal eigenvalue](#); [localization of spectrum bottom](#)

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