Yarovaya E. (Lomonosov Moscow State University, Moscow, Russia). **Branching random walks on nested lattices of growing dimensions.** We consider a continuous-time symmetric branching random walk on the multidimensional lattice $\mathbb{Z}^d$, $d \in \mathbb{N}$, with a single branching source of particles with intensity β, see [1]. We establish conditions for the "inheritability" of the properties of the random walks underlying the process when passing from $\mathbb{Z}^d$ to $\mathbb{Z}^{d+1}$. Under these conditions, we prove a limit theorem on the representation of the eigenvalue $\lambda_0 > 0$ of the evolution operator of the mean particle numbers, generalizing the results from [2].

Theorem For every $d \in \mathbb{N}$, as $\beta \to \infty$, the following relation holds:

$$\lambda_0(d, \beta) = \beta + a_d(0) + O(\beta^{-1}),$$

where $a_d(0) < 0$ is a diagonal element of the transition intensity matrix of the random walk.

Corollary

$$\lim_{\beta \to \infty} (\lambda_0(1, \beta) - \lambda_0(d, \beta)) = a_1(0) - a_d(0).$$

REFERENCES

[1] Yarovaya E. B. Yarovaya, Branching random walks in an inhomogeneous medium, Moscow Center for Continuous Mathematical Education, Moscow, 2025, 109 p.

[2] Gusarov A. S., Yarovaya E. B. Estimation of particle number growth in a supercritical branching random walk by the method of successive approximations. Theory Probab. Appl., 2026 (accepted for publication).