

Institute for Applied Mathematics, Bonn University

## Oberseminar Stochastik

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Lipschitz-Saal (LWK 1.016)

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# Equilibrium fluctuations for a multi-species particle system with long jumps

In the present paper, we study the equilibrium fluctuations of a particle system in infinite volume with two conserved quantities and long-range dependence. More specifically, the model of interest is the so-called ABC model, in which three types of particles (A, B and C) exchange their locations between  $x \in \mathbb{Z}$  and  $x + z \in \mathbb{Z}$  at a rate that depends on the type of particles involved and is proportional to  $|z|^{-\gamma-1}$  for  $\gamma > 0$ . After rigorously identifying the normal modes associated to the conserved quantities (the density of particles of types  $A$  and  $B$ , say), we prove that their fluctuations converge to independent fractional stochastic partial differential equations (SPDEs), which are either Gaussian or the Stochastic Burgers equation, and whose nature is determined by the microscopic range of dependence and the strength of the asymmetry.