Dynamic phase transitions in large work production of linear diffusion systems HYUNGGYU PARK, Korea Institute for Advanced Study, CHULAN KWON, Myongji University, JAE DONG NOH, University of Seoul — We present the theoretical study on non-equilibrium (NEQ) fluctuations for diffusion dynamics in high dimensions driven by a linear drift force. We find the time-dependent probability distribution function exactly as well as the NEQ work production distribution P(W) in terms of solutions of nonlinear differential equations. In two dimensions, we find analytically a sequence of dynamic phase transitions in the exponential tail shape of P(W). Their implications and orgins are discussed.

Hyunggyu Park
Korea Institute for Advanced Study