

Excursion Processes Associated with Elliptic Combinatorics

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Research of elliptic analogues of formulas is a new trend in enumerative combinatorics which has followed the previous trend of studying q -analogues. Recently Schlosser proposed a lattice path model in the square lattice with a family of totally elliptic weight-functions including several complex parameters and discussed an elliptic extension of the binomial theorem. In the present talk, we introduce a family of excursion processes starting from the origin and returning to the origin in a given time duration $2T$ associated with Schlosser's elliptic combinatorics. The processes are inhomogeneous both in space and time and hence expected to provide interesting models in non-equilibrium statistical mechanics. By numerical calculation we show that the maximum likelihood paths of the elliptic excursion processes on the spatio-temporal plane are not lines in general and are nontrivially curved depending on parameters. We will report some trials to analyze asymptotics of probability laws in the long-term limit $T \rightarrow \infty$ for the paths of the elliptic excursion processes. (This is a joint work with H. Baba (Chuo University).)