Naoki Kubota (Nihon University, Japan)

Title: On the speed of convergence in first passage percolation under low moment conditions

Abstract: We consider the first passage percolation with i.i.d. weights on edges of a cubic lattice. Under the assumptions that a weight is equal to zero with probability smaller than the critical probability of bond percolation in a cubic lattice, and has a moment condition, we investigate rates of convergence in first passage time. In addition, we give an application of our result to variance of the first passage percolation in the case where the limit shape has flat edges.

Seiichiro Kusuoka (Tohoku University, Japan)

Title: Exponential convergence of Markovian semigroups and their spectra on L^p-spaces

Abstract: A Markovian semigroup on L^2-space with suitable conditions can be regarded as a Markovian semigroup on L^p-spaces for $p \in [1, \infty)$. When we additionally assume ergodicity of the Markovian semigroup, the rate of convergence can be considered. However, generally the rate of convergence depends on the norm of the spaces. The purpose of this paper is to investigate the relation between the rates with respect to L^p-spaces for different p, to obtain some sufficient condition for the rates to be independent of p, and to give an example that the rates depend on p. We also consider spectra of Markovian semigroups with respect to L^p-spaces, because the rate of convergence is closely related to the spectra. This is a joint work with Ichiro Shigekawa.

Makoto Nakashima (Tsukuba University, Japan)

Title: Super-Brownian motion in random environment arising from branching random walks in random environment

Abstract: We consider branching random walks in time-space random environment. We will look at the existence of the scaling limit of them under some conditions and we call it super-Brownian motion in random environment which satisfies a stochastic heat equation. Also, we will discuss the uniqueness of the stochastic heat equation.

Charles Newman (New York University, US)

Title: Coarsening models on various graphs (especially $2D$ slabs)

Abstract: Coarsening models are continuous-time Markov processes whose states are the assignments of one of two possible values (say $+1$ or -1) to the vertices of some (usually infinite) graph like $\mathbb{Z}^d$ (with nearest-neighbor edges) or a homogeneous tree. The transition rules (which are the zero temperature limit of stochastic Ising models) are that at rate one each vertex updates by adjusting to agree with a strict majority of its neighbors or in the event of a tie, tosses a fair coin. One is often interested in an initial state in which sites choose values independently with probability p of being $+1$. Among the questions of interest are, for $p = 1/2$, whether sites change preference infinitely often (sometimes called blinkers) and, for $p > 1/2$, whether all sites are eventually $+1$, and how the answers to these questions depend on the underlying graph. We will review some old results about $\mathbb{Z}^d$ for $d = 2$ and recent somewhat unexpected results (jointly with Damron, Kogan and Sidoravicius) about two dimensional slabs; in particular that the existence of blinkers depends on the slab width. Existence of blinkers for $d \geq 3$ is open.

Julien Poisat (Universiteit Leiden, Netherlands)

Title: The critical curve of the random pinning and copolymer models at weak coupling

Abstract: We study random pinning and copolymer models, when the return distribution of the underlying renewal process has a polynomial tail with finite mean. We compute the asymptotic behavior of the critical curves of the models in the weak coupling regime, showing that it is universal. This proves a conjecture of Bolthausen, den Hollander and Opoku for copolymer models, which we also extend to pinning models. This is joint work with Quentin Berger, Francesco Caravenna, Rongfeng Sun and Nikos Zygouras.