Dispersal inference across scales

Jun.-Prof. Dr. Mathias Trabs
(Universität Hamburg)

July 5, 2017

Consider a homogeneous Poisson point process $M = \sum_j \delta_{P_j}$ on a bounded interval with some intensity $\lambda > 0$. For each P_j we generate an offspring $C_j = P_j + \sigma D_j$ where the random variables D_j are i.i.d. with some unknown density f. Based on the point processes M and $N = \sum_j \delta_{C_j}$, we study the estimation of the dispersal density f. This model has applications in biological dispersal, genomics and queuing theory. The statistical problem depends severely on the order of the scale parameter σ compared to the intensity λ. We investigate several estimation approaches. The resulting convergence rates for $\lambda \to \infty$ reveal a surprising dependence on $\sigma = \sigma_\lambda$.
The talk is based on joint work with Marie Doumic and Marc Hoffmann.