SEMINARIO

"On Bayesian nonparametric priors derived from Poisson-Kingman models"

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Abstract:

We will elucidate some connections between Pitman's work on Poisson-Kingman models
for random partitions (Pitman, 2003) and priors recently arising in a nonparametric
Bayesian context. Explicit calculations will be given for models generalizing the now popular
normalized Inverse Gaussian models developed by Lijoi et al. (2005) and a quite
precise analysis of the historical origins of those results will be provided. In particular
we will show how normalized generalized Gamma processes arise by exponential tilting
of Poisson-Kingman models derived from the stable law. It turns out that results on
quantities of statistical interest in Bayesian nonparametrics under those priors – like the
analogous of the Blackwell-MacQueen prediction rules or the distribution of the number
of distinct elements observed in a sample – are straightforward consequences of Pitman's
results. Moreover this construction elucidates that N-GG priors induce exchangeable partition
probability functions of Gibbs product form (Gnedin and Pitman, 2005).