## Poisson-GP

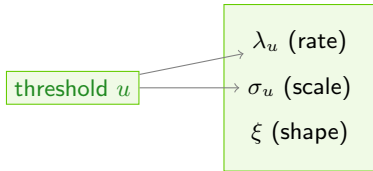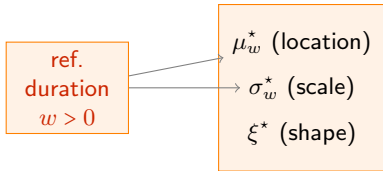threshold $u$ → $\lambda_u$ (rate)

→ $\sigma_u$ (scale)

$\xi$ (shape)

exceedances over $u$: $T_i \sim \mathsf{PoisProc}(\lambda_u)$
marks: $Y_i \sim \mathsf{GPD}(u, \sigma_u, \xi)$
excesses: $Y_i - u \sim \mathsf{GPD}(0, \sigma_u, \xi)$.

## Point-Process

ref. duration $w > 0$ → $\mu_w^\star$ (location)

→ $\sigma_w^\star$ (scale)

$\xi^\star$ (shape)

The maximum $M$ of the marks $Y_i$ on an interval with duration $w$ has a tail which is $\mathsf{GEV}(\mu_w^\star, \sigma_w^\star, \xi^\star)$. It has a mixed distribution with an atom at $M = -\infty = \sup(\varnothing)$.