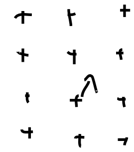


3. Consider independent random variables U_1 a U_2 with uniform distribution on the interval $[0, a]$, $a > 0$, and the point process Φ in $\mathbb{R}^2$defined as

$$\Phi = \sum_{m,n\in\mathbb{Z}} \delta_{(U_1+ma,U_2+na)}.$$

Determine the Palm distribution and the reduced second-order moment measure of the process. Express its contact distribution function and the nearest-neighbour distribution function.

$w_1 =$

Palm distribution P_x : degenerate ... $\Phi = \varphi_1^x = \sum_{m,n\in\mathbb{Z}} \delta(x_1+m$

$P_x^!$: $\Phi = \varphi_2^x = \sum_{(m,n)\in\mathbb{Z}^2\setminus\{(0,0)\}} \delta(x_1+ma, x_2+na) = \varphi_1^x - \delta_{(x_1,x_2)}$

Reduced 2nd order moment measure:

$\lambda \mathcal{K}(B) = \mathbb{E}_0^! \Phi(B)$, $B \in \mathcal{B}(\mathbb{R}^2)$

stationary point processes (Remark 37)

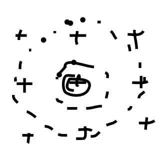
$= \varphi_2^0(B) = \sum_{(m,n)\in\mathbb{Z}^2\setminus\{(0,0)\}} \mathbb{1}((ma, na)\in B)$

$\lambda = \frac{1}{a^2}$ ... from earlier exercise $\rightarrow$ $\mathcal{K}(B) = a^2 \cdot \sum_{(m,n)\in\mathbb{Z}} \dots$

Nearest neighbour dis~~tance~~ distribution function:

$r > 0$ $G(r) = P_0^!(\{\varphi \in \mathcal{N} : \varphi(b(o,r)) > 0\})$

$G(r) = \underline{\mathbb{1}}(a \leq r)$



$F(r) = P(\Phi(b(o,r)) > 0)$