Examen Info partiel 2012 question 3

$$\mathcal{L}_S(t) = \mathcal{L}_{X_1}(t) \cdot \mathcal{L}_{X_2}(t)$$

$$= P_{M_1}\left(\frac{\beta_1}{\beta_1 + t}\right) P_{M_2}\left(\left(\frac{\beta_2}{\beta_2 + t}\right)^{\alpha_1}\right)$$

$$= P_{M_1}\left(\frac{qr}{1-(1-q)r}\right) \cdot P_{M_2}\left(r^{\alpha_2}\right) \quad \text{où} \quad q = \frac{0{,}01}{0{,}01} = 1$$

$$= P_{M_1}(r) \cdot P_{M_2}\left(r^{\alpha_2}\right)$$

$$= P_{M_1}\left(P_J(r)\right) \cdot P_{M_2}\left(P_I(r)\right) \quad \text{où} \quad P(J=1) = 1, \; P(I=\alpha_2) = 1$$

$$= P_K(r) \cdot P_H(r)$$

$$\mathcal{L}_S(t) = \sum_{\pi=0}^{\infty}\left(\sum_{j=0}^{\infty} f_K(j) f_H(\pi - j)\right) r^{\pi} = \sum_{k=0}^{\infty} v_k \left(\frac{\beta_2}{\beta_2 + t}\right)^{\pi}$$

On déduis :

$$f_S(x) = v_0 + \sum_{k=1}^{\infty} v_k \, H(x, k, \beta_2)$$