1 Independent link metadata

$$P(k,F) = P_k P_F, \quad P_k \sim Bin(n,p), \quad P_F \sim P(\mu) \tag{1}$$

$$\phi_{k,F} = \phi_F = 0 \text{ if } F \geq F_0, 1 \text{ otherwise} \tag{2}$$

$$\begin{aligned} g_0(z) &= \int \sum_k \left(\phi_{k,F} P(k,F) z^k \right) dF \\ &= \sum_F \sum_k \phi_F P_k P_F z^k \\ &= \sum_{F=0}^{F_0-1} \sum_{k=0}^{\infty} P_k P_F z^k \\ &= \sum_{F=0}^{F_0-1} P_F \left(\sum_{k=0}^{\infty} P_k z^k \right) \end{aligned} \tag{3}$$

$$\langle k \rangle = \sum_F P_F \left(\sum_k k P_k \right) \tag{4}$$

$$g_1(z) = \frac{1}{\langle k \rangle} \sum_{F=0}^{F_0-1} P_F \left(\sum_{k=1}^{\infty} k P_k z^{k-1} \right) \tag{5}$$

$$u = 1 - g_1(1) + g_1(u) \tag{6}$$

$$S = \frac{g_0(1) - g_0(u)}{g_0(1)} \tag{7}$$