Let C = number of cloud symbols
R = number of ripple symbols
u = number of unresolved symbols
$P_{C,R,u}(c,r,u)$ = probability of being in state (c,r,u)
m = input block length

Assume we have collected $m+\phi$ coded symbols. If we look at the probability-generating function of $P_{C,R,u}$ we see that

$$P_u(x,y) = \sum_{c=0}^{\phi+m}\sum_{r=1}^{\phi+m} P_{C,R,u}\, x^c y^{r-1} = \sum_{c=0}^{\phi+m}\sum_{r=0}^{\phi+m} P_{C,R,u}\, x^c y^{r-1} - \sum_{c=0}^{\phi+m} P_{C,R,u}(c,0,u)\, x^c y^{-1}$$

$$\Rightarrow \quad P_u(1,1) = \sum_{c=0}^{\phi+m}\sum_{r=0}^{\phi+m} P_{C,R,u} - \sum_{c=0}^{\phi+m} P_{C,R,u}(c,0,u)$$

$$= 1 - \Pr\{\text{Decoding failure when } u \text{ symbols are unresolved}\}$$

$$\Rightarrow \quad P_F(\phi) \triangleq \sum_{u=1}^{m+\phi} \Pr\{\text{Decoding failure when } u \text{ symbols are unresolved}\}$$

$$= \sum_{u=1}^{m+\phi} (1 - P_u(1,1))$$

Find by numerically evaluating expression in Theorem 1 in Karp2004.

Peeling decoder failure probability when $m+\phi$ symbols have been collected