Received Signals under multi-cell and multi-path fading environments

\[ r(f) = \sum_{t=1}^{Nc} \sum_{i=1}^{N} A_{i} \exp(j(-\tau_0 + \tau_i) + n(f)) \]

Correlating the desired signals to the corresponding sequences with the joint use of beamforming and Rake receivers

\[ r_P = \sum_{t=1}^{Nc} \sum_{i=1}^{N} 4G_s(\theta, \phi) \cos(\psi_i - \psi_d + \phi) J_{n, f, r} + N_0 \]

Computing the in-cell interference and modeling the total other-cell interference as Gaussian, the error probability is obtained through SIGA:

\[ P_e = \frac{2}{3} G \left( \frac{\sqrt{\text{Var}(\epsilon_f)}}{3 \sqrt{\text{Var}(\epsilon_i)/X}} \right) \]

\[ \text{Var}(\epsilon_f) = \text{Var}(\epsilon_i) + \text{Var}(\epsilon_{\text{inter}}) \]

Error Probability of CDMA systems with Antenna Arrays

Error Prob. of CDMA systems with beamforming and Rake receivers under different power control schemes, which impact BER by changing the received signal-to-noise ratio.