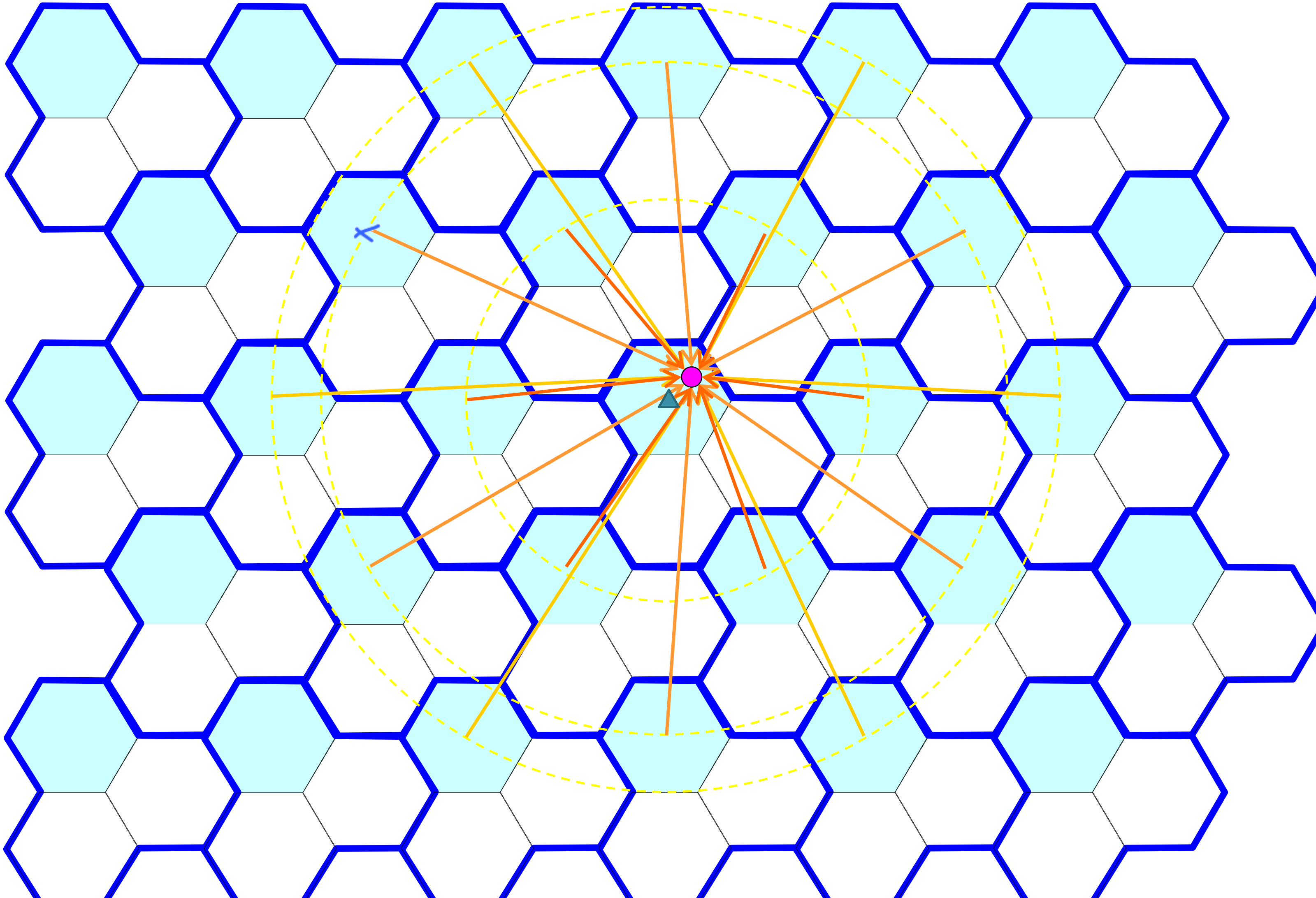
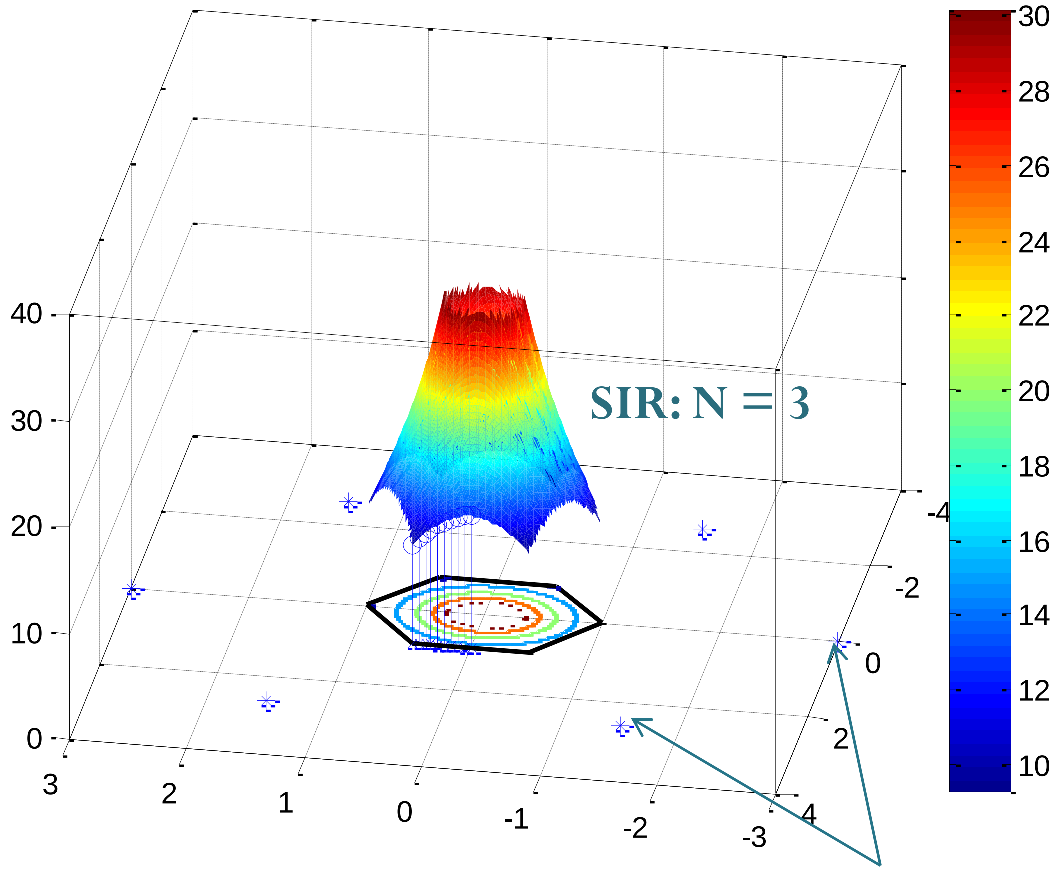
SIR: N = 3



SIR: N = 3

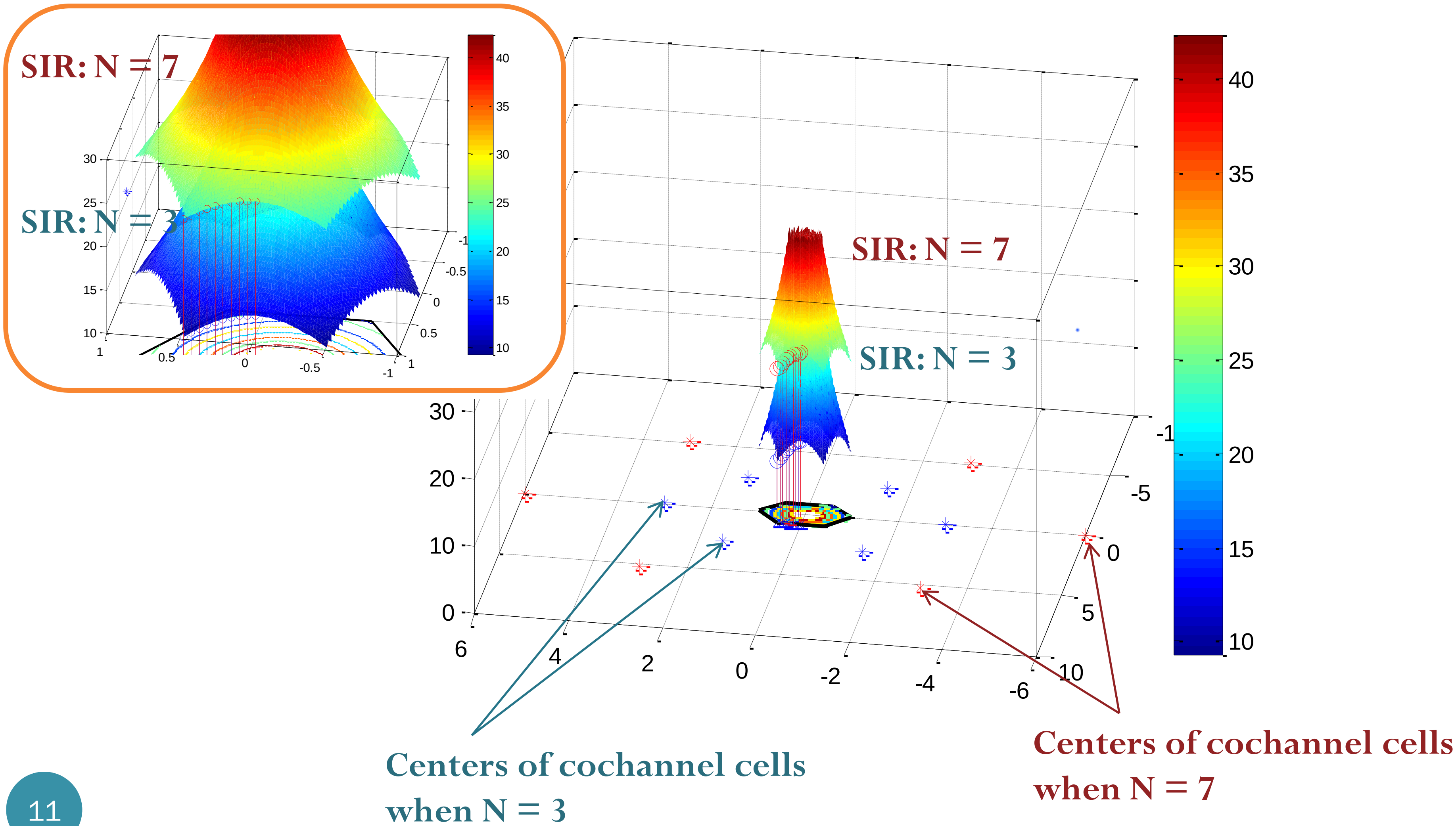
d = distance between MS and BS

$$\mathrm{SIR} \approx \frac{k/d^{\gamma}}{\sum_i k/D_i^{\gamma}} = \frac{1}{\sum_i 1\Big/\left(\frac{D_i}{d}\right)^{\gamma}} = \frac{1}{\sum_i \left(\frac{D_i}{d}\right)^{-\gamma}}$$



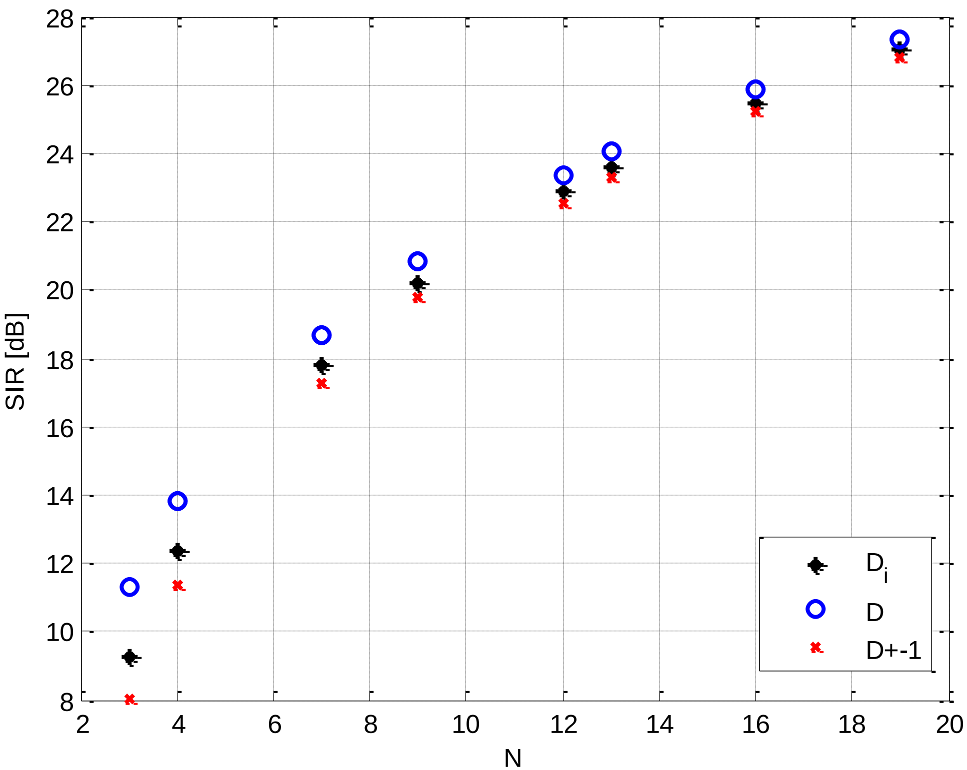
Observe that the SIR value is smallest when MS is at any of the corners of the hexagonal cell. At such locations, d = R (the cell radius).

SIR: N = 3 vs. N = 7



SIR: N = 7
SIR: N = 3
SIR: N = 7
SIR: N = 3
Centers of cochannel cells when N = 3
Centers of cochannel cells when N = 7

Comparison



$$\mathrm{SIR} \approx \frac{1}{\sum_{i=1}^{6}\left(\frac{D_i}{R}\right)^{-\gamma}}$$

$$\mathrm{SIR} \approx \frac{1}{6} Q^{\gamma}$$

$$\mathrm{SIR} \approx \frac{1}{2(Q-1)^{-\gamma} + 2(Q+1)^{-\gamma} + 2Q^{-\gamma}}$$

$$Q = \frac{D}{R}$$