

# Different Handover Policy on Different Channel Model

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# Independent Variable

- Bandwidth = 10GHz
- Temperature = 27°C
- BS power = 23 dBm
- MS height = 1.5 m
- BS height = 51.5 m
- Tx gain = 14 dB
- Rx gain = 14 dB

# Dependent Variable

- Handover policy
  - Eager
  - Lazy
  - Eager + Threshold(ET)
  - Relative Threshold(RT)
- Channel model
  - Smooth
  - Two-ray ground
  - Cost231
- MS numbers
  - 100
  - 200
- MS power
  - 23 dBm
  - 26 dBm

# Handover Policy

- Eager
  - Change whenever find the better SINR
- Lazy
  - Only change if all of the next 5 cycle current BS is not the best.
- ET
  - Only change when other BS is better than current one and is above the threshold(-55 dB)
- RT
  - Only change when other BS is better than current one by the threshold(0.5dB)

# Channel Model

- Smooth

- $g(d) = d^{-n_1} \left(1 + \frac{d}{b}\right)^{-n_2}$ , where  $n_1 = 2$ ,  $n_2 = 4$  and  $b = 150(\text{ISD})$

- Two-ray Ground

- $g(d) = \frac{(H_t H_r)^2}{d^4}$

- Cost231

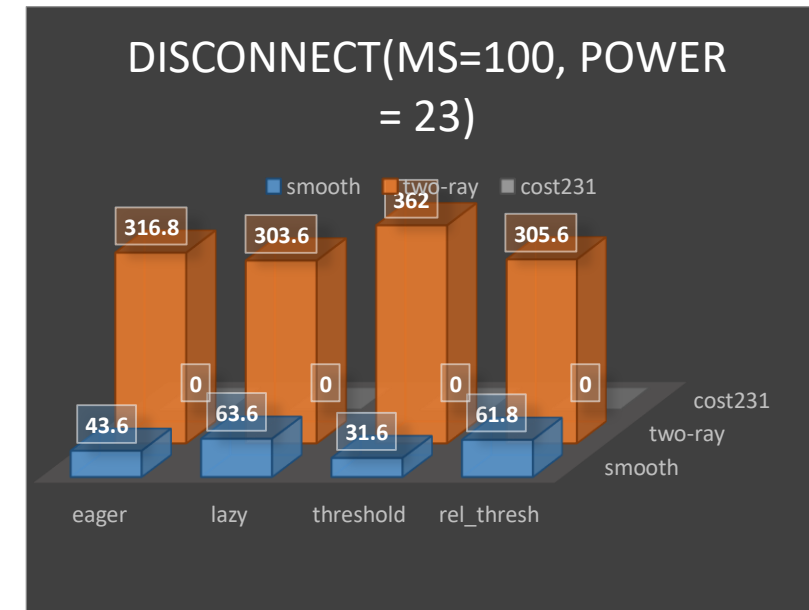
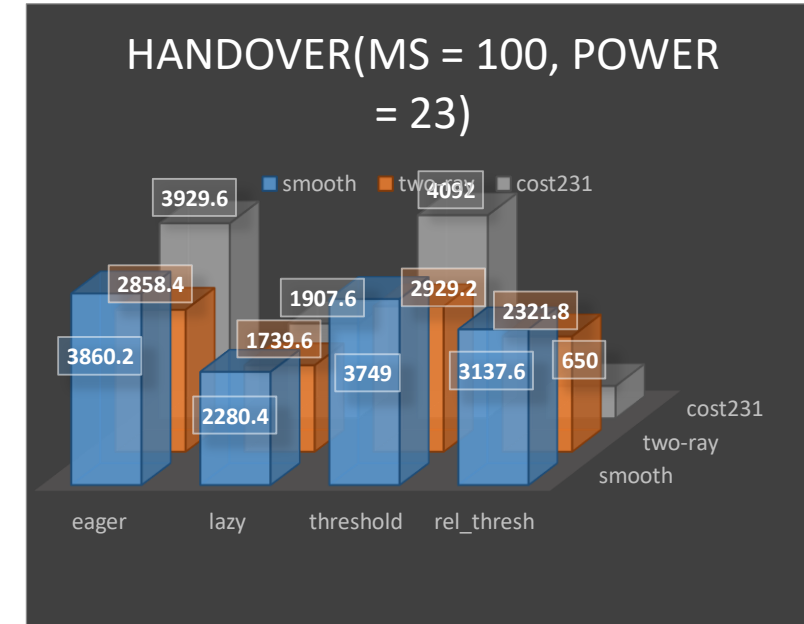
- $L(\text{dB}) = 46.3 + 33.9 \log f - 13.82 \log h_b - a(h_m) + [44.9 -$

# Simulation result

- Simulation time = 900 cycle
- 5 tests of each case, and get the average of the number of handover and disconnect.

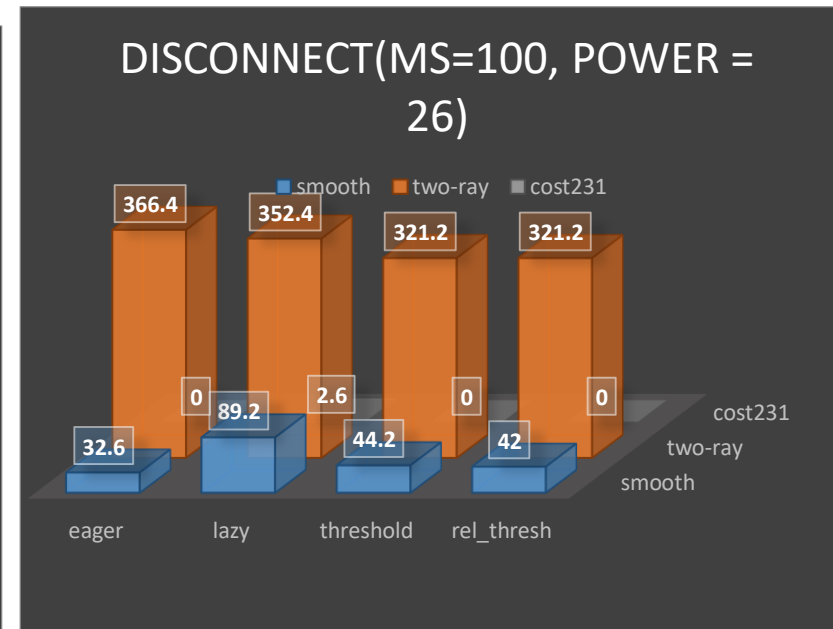
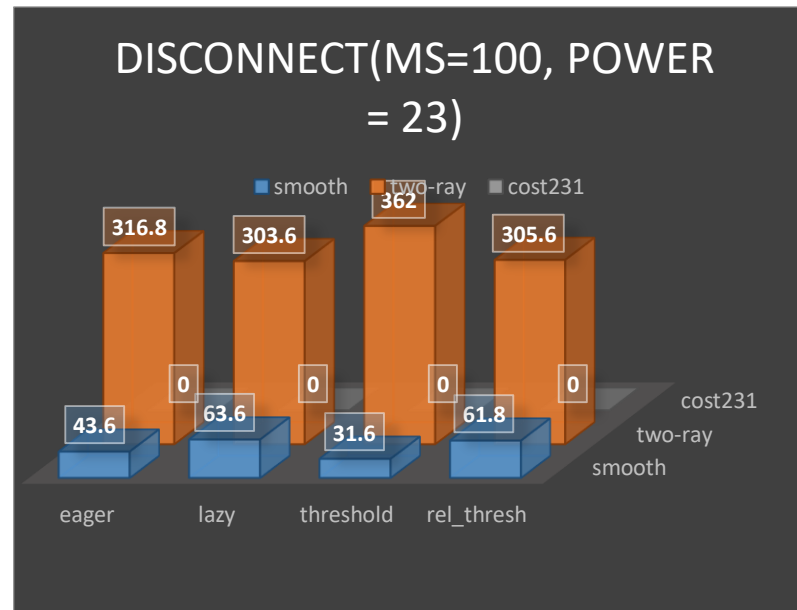
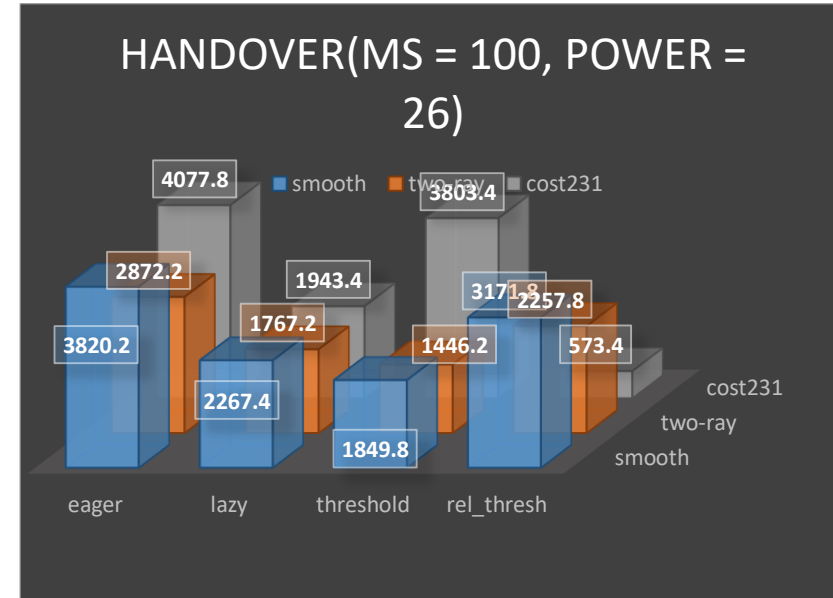
# 100 MSs, power = 23 dBm, UL

- Two-ray ground model has the worst performance, because the signal power is the weakest
- In COST231 channel model, all SINR are good, so there is no disconnect occurs.
- Lazy and RT policy don't improve performance in smooth channel model.
  - Threshold or stall cycle is too large(not well-tuned)
  - Near-far effect is significant, change early is better



# 100 MSs, power = 26 dBm, UL

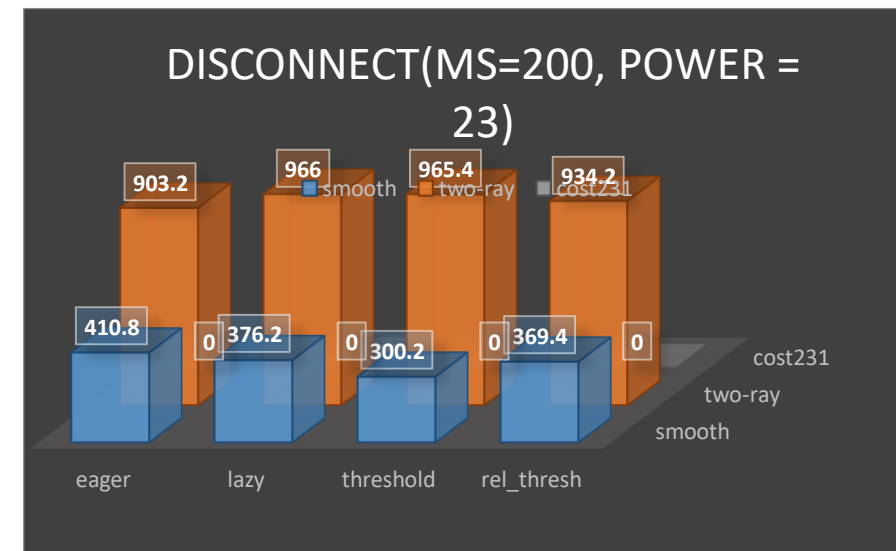
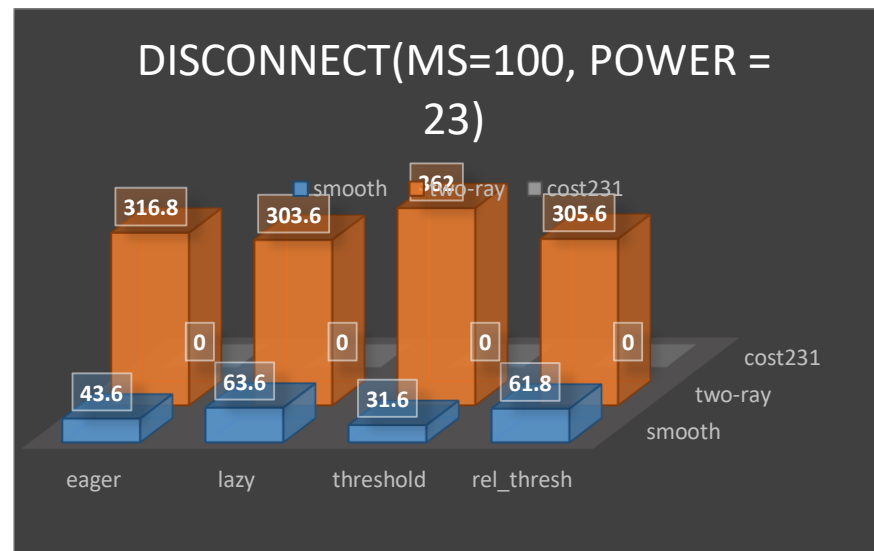
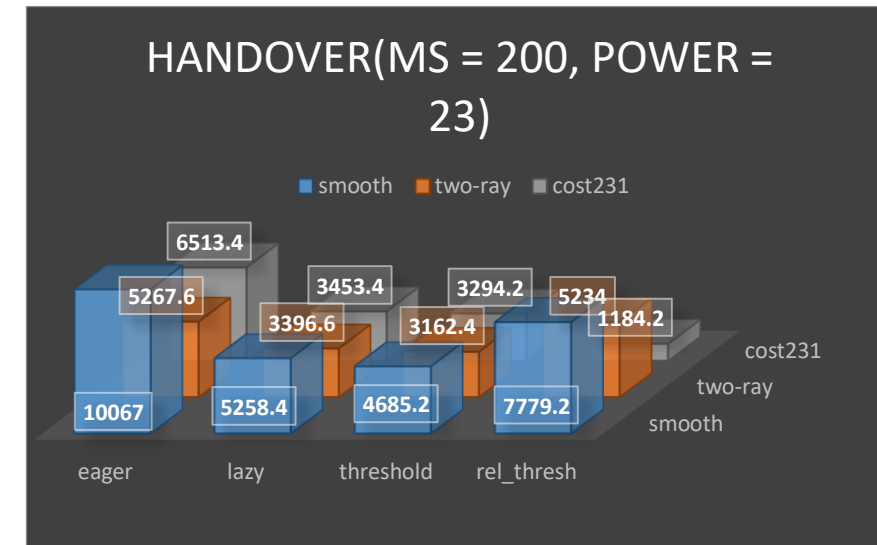
- Change ASAP, Signal power will play much more important role here.
- However, will some quality control (ET or RT) especially in two-ray model can get better result.





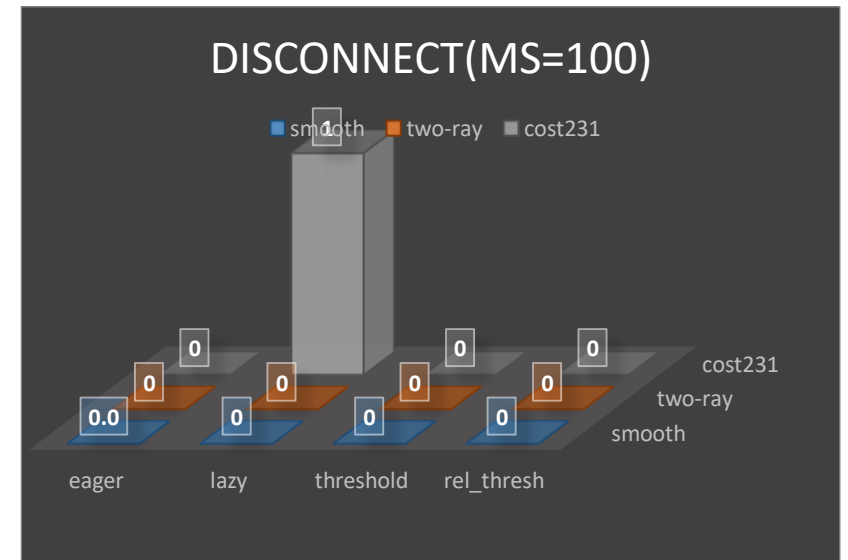
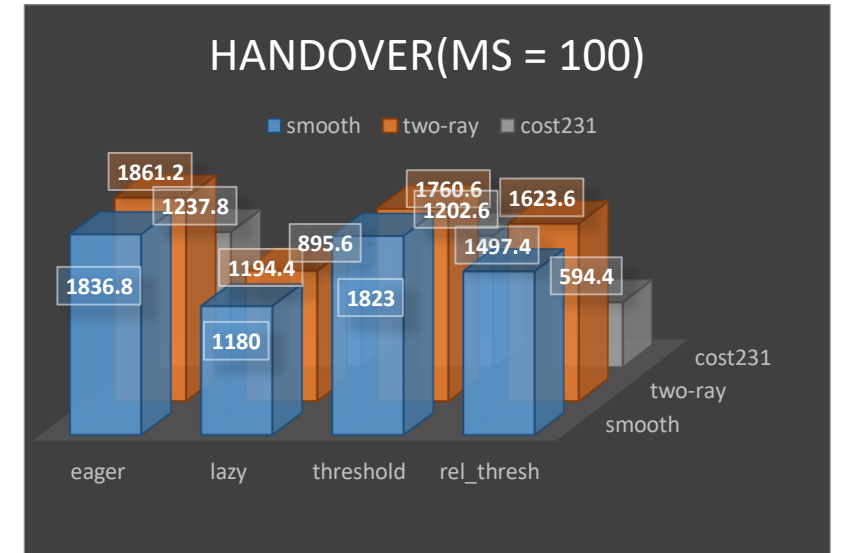
# 200 MSs, power = 23 dBm, UL

- Disconnect increase much more than twice. There is no much difference in different handover policy(too much interference).



# 100 MSs, power = 23 dBm, DL

- No need to consider MS interference. Thus, it's simply choose nearest BS.
- Therefore, almost no disconnect occurs.



# Future Prospect(in the paper report)

- Use different motion pattern to consider influence of velocity
- Analyze the previous result in detail(design different experiments)

Q&A

**THANK YOU**