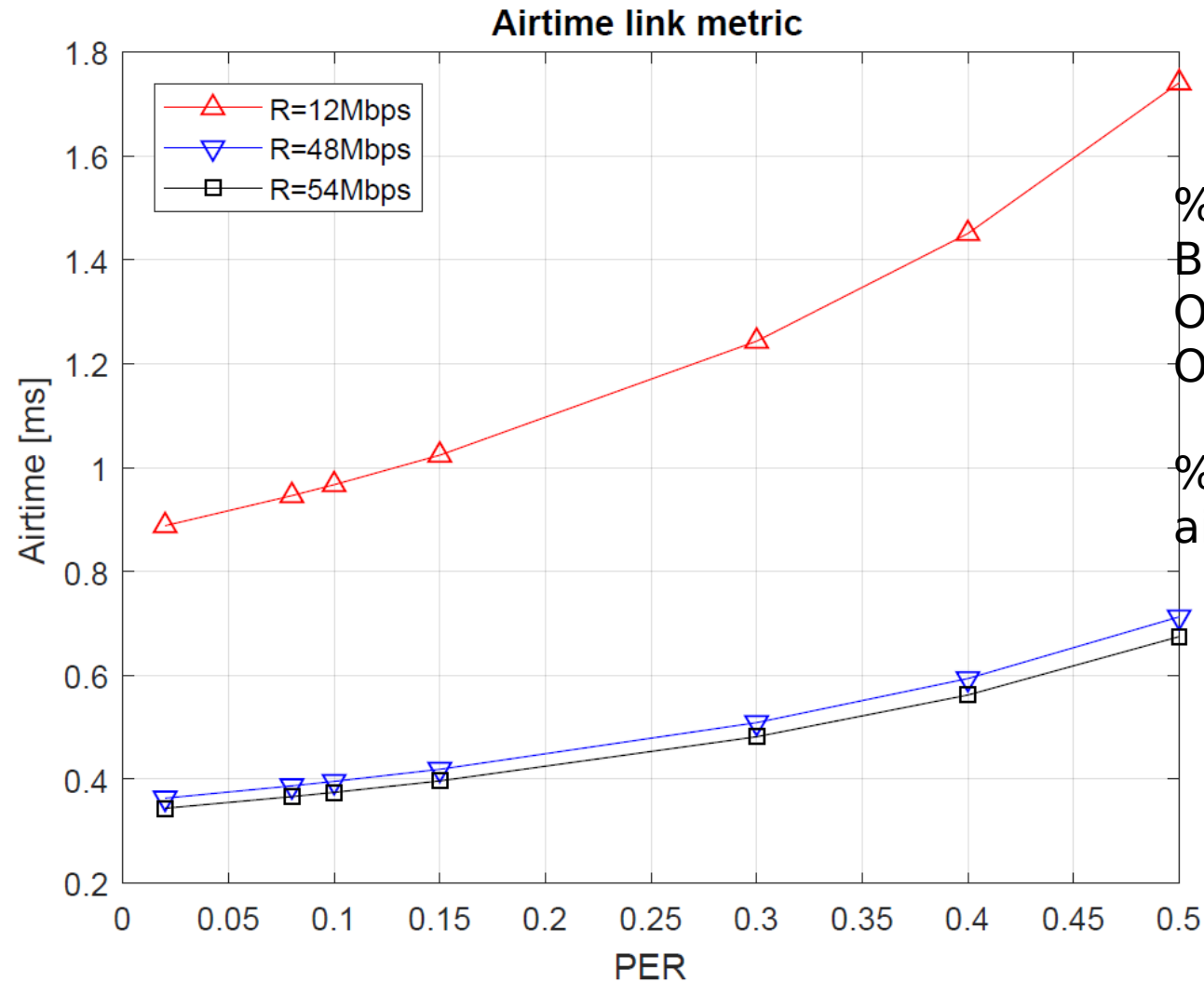# HWMP link metric

- Airtime
- Others are possible
  - Power-aware, load-balancing, QOs

$$c_a = \left[O_{ca} + O_p + \frac{B_t}{r} \right] \frac{1}{1 - e_{pt}}$$

- r: link bit rate
- e_{pt}: frame error rate

Parameter	Value (802.11a)	Value (802.11b)	Description
O_{ca}	75µ s	335µ s	Channel access overhead (depends on PHY)
O_p	110µ s	364µ s	Protocol overhead
B_t	8224	8224	Number of bits in test frame

HWMP link metric (II)

Airtime link metric

% define constants for 802.11a
B = 8224; % test frame size in bits
Oca = 75e-6; % channel access overhead
Op = 110e-6; % protocol overhead

% function to calculate airtime
airtime = @(r,PER) (Oca+Op+B/r) * (1/(1-PER));