# Question about Antenna and EM Modeling with MATLAB

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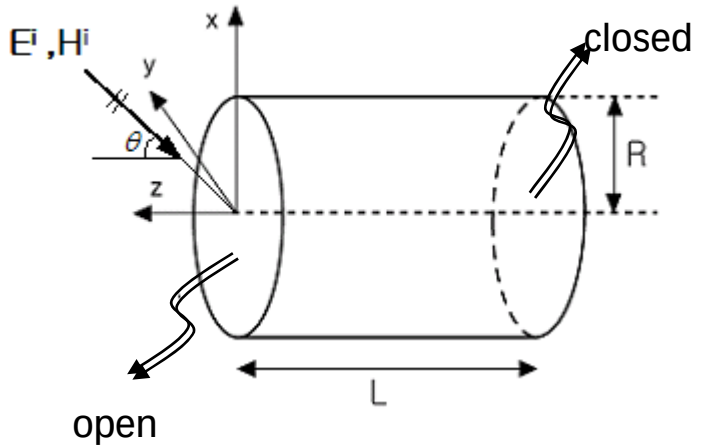
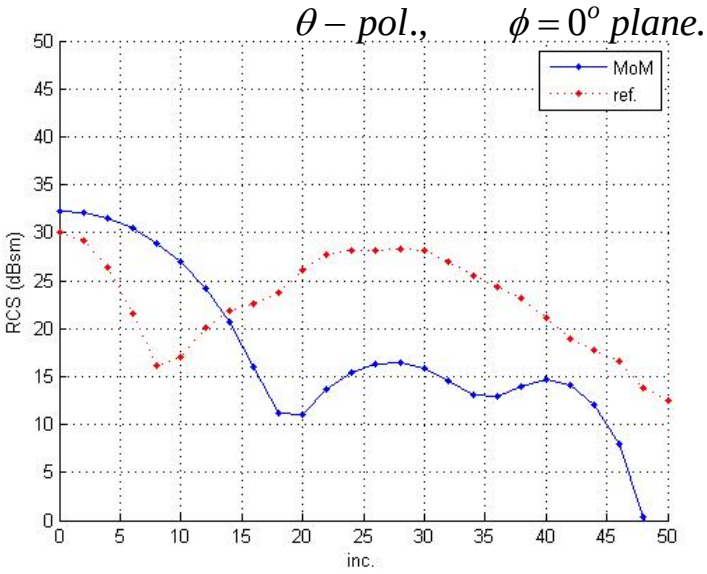
# Simulation result

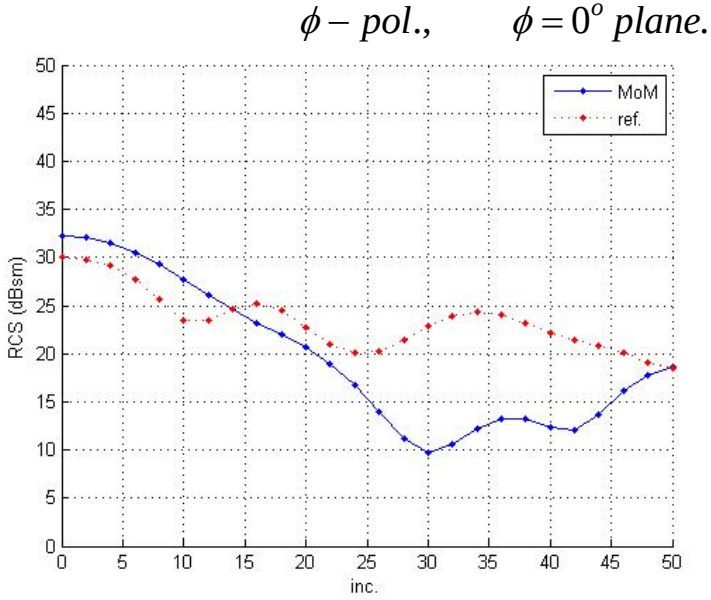
model I

Open Ended Circular Cavity




$L = 3.5\lambda, R = 2\lambda$




R=∞ (efield1.m modified)

$$\text{RCS} = \lim_{r\to\infty} 4\pi r^2 \frac{\left|\overline{E_s}\right|}{\left|\overline{E_i}\right|} = \lim_{r\to\infty} 4\pi r^2 \overline{E_s} \bullet \overline{E_s}^*$$

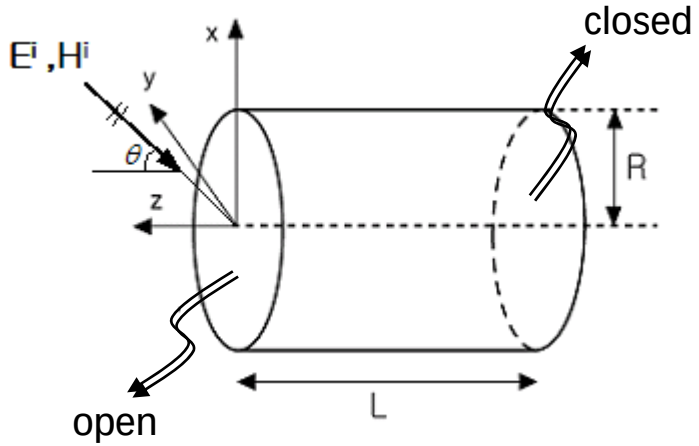
$$\approx \frac{\eta^2}{4\pi} k^2 \sum_{m=1}^{M} \left\{ \left( \hat{r} \bullet \overline{m} \right) \hat{r} - \overline{m} \right\} \bullet \sum_{m=1}^{M} \left\{ \left( \hat{r} \bullet \overline{m}^* \right) \hat{r} - \overline{m}^* \right\}$$

Same rcs results obtained as $R=10^{150}$ approximation used

# Simulation result

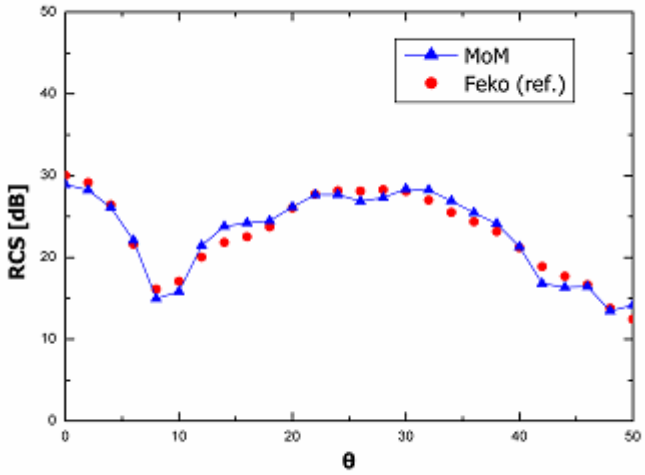
model I

Open Ended Circular Cavity

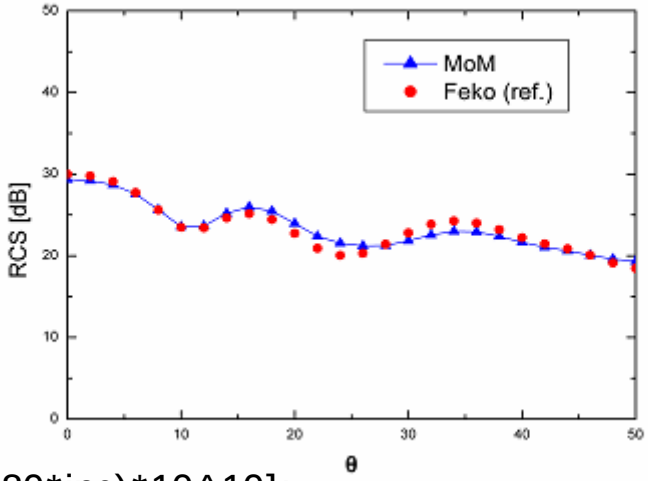



$L = 3.5\lambda, R = 2\lambda$

$\theta - pol., \quad \phi = 0^o \ plane.$




$\phi - pol., \quad \phi = 0^o \ plane.$




$R=10^{10}$ approximation

(@ObservationPoint in efield1.m)

ex. ObservationPoint=[sin(pi/180*inc)*10^10; 0; cos(pi/180*inc)*10^10];



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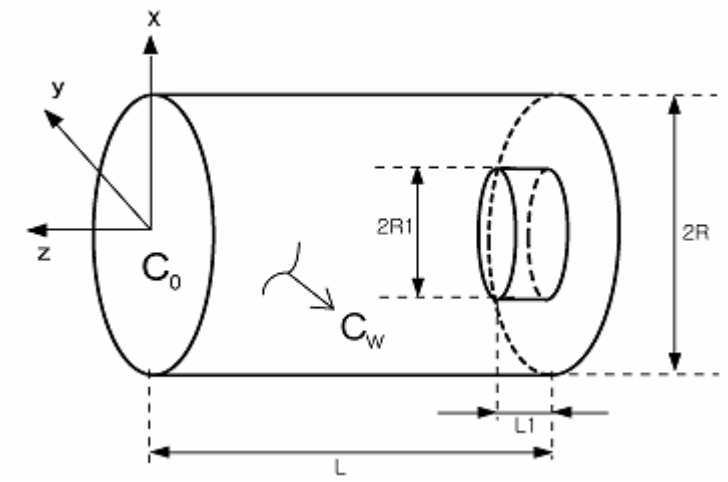
# Simulation result

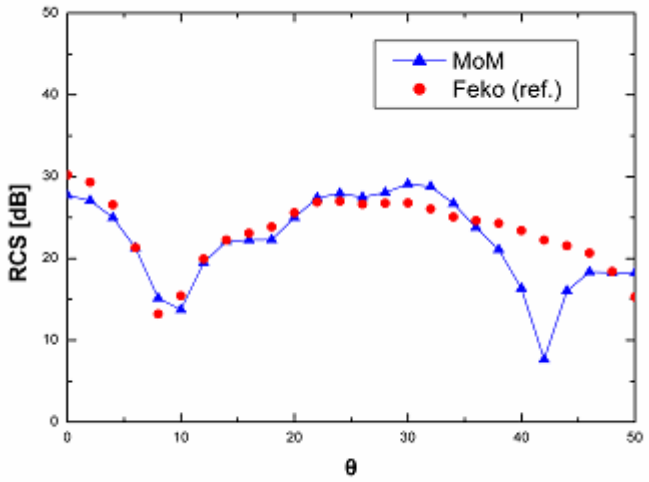
**model II**

Open Ended Circular Cavity with hub

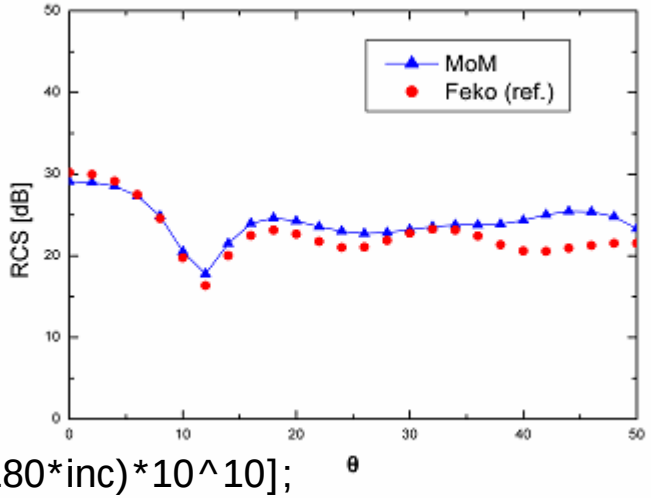



$L = 3.5\lambda, R = 2\lambda, L1 = 0.5\lambda, R1 = 1\lambda$

$\theta - pol., \quad \phi = 0^o \ plane.$




$\phi - pol., \quad \phi = 0^o \ plane.$




$R = 10^{10}$ approximation

(@ObservationPoint in efield1.m)

ex. ObservationPoint=[sin(pi/180*inc)*10^10; 0; cos(pi/180*inc)*10^10];



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