

Kron Simulation of Field-to-line Coupling Using a Meshed and a Modified Taylor Cell

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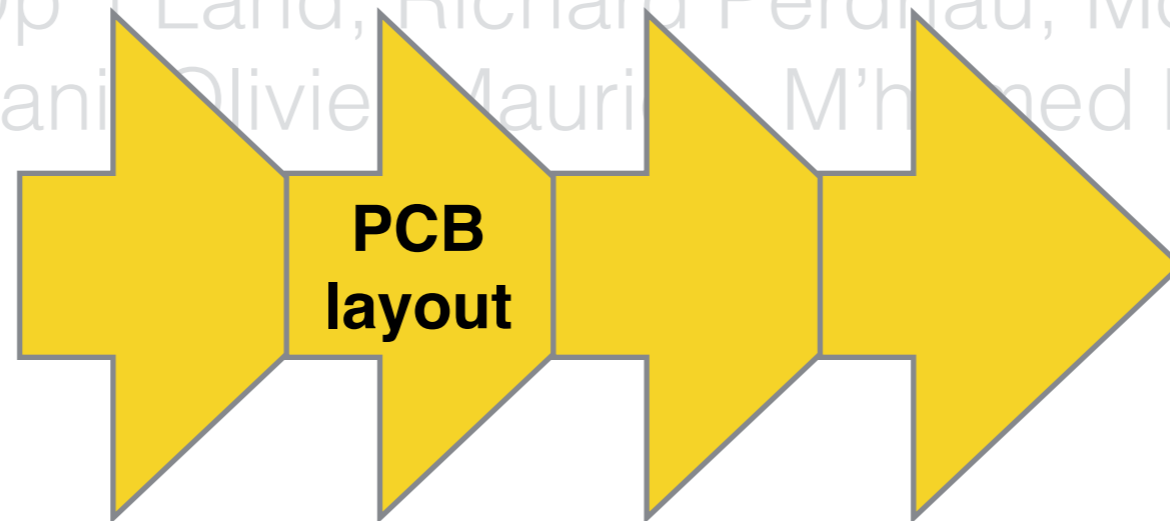
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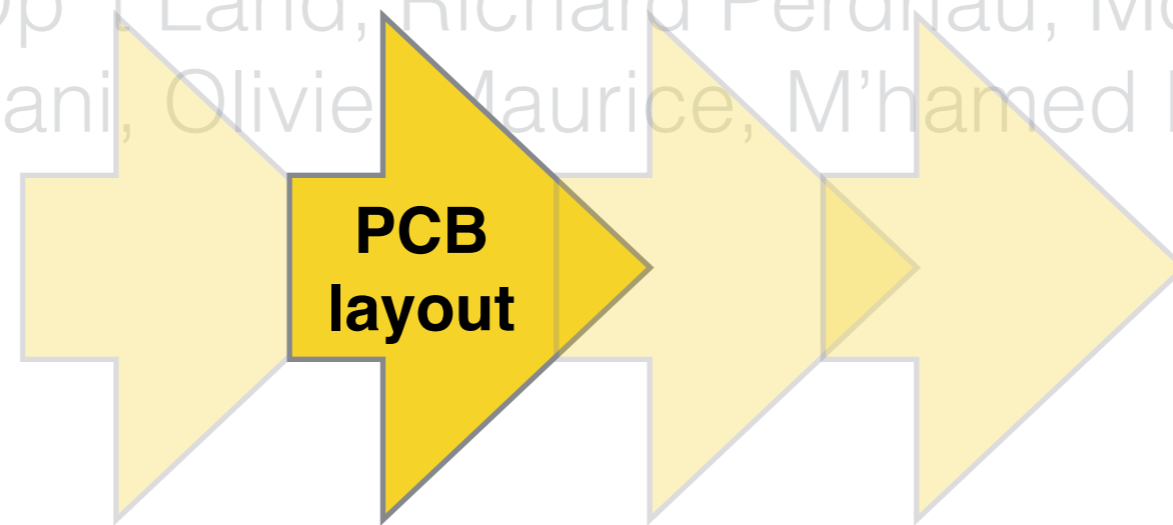
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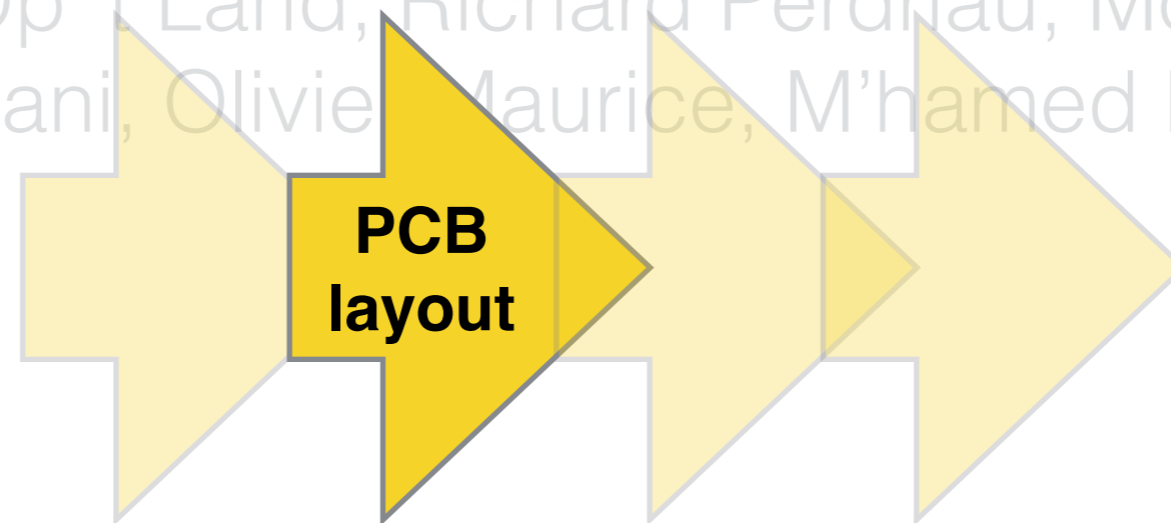
parameter gathering

set-up

calculation

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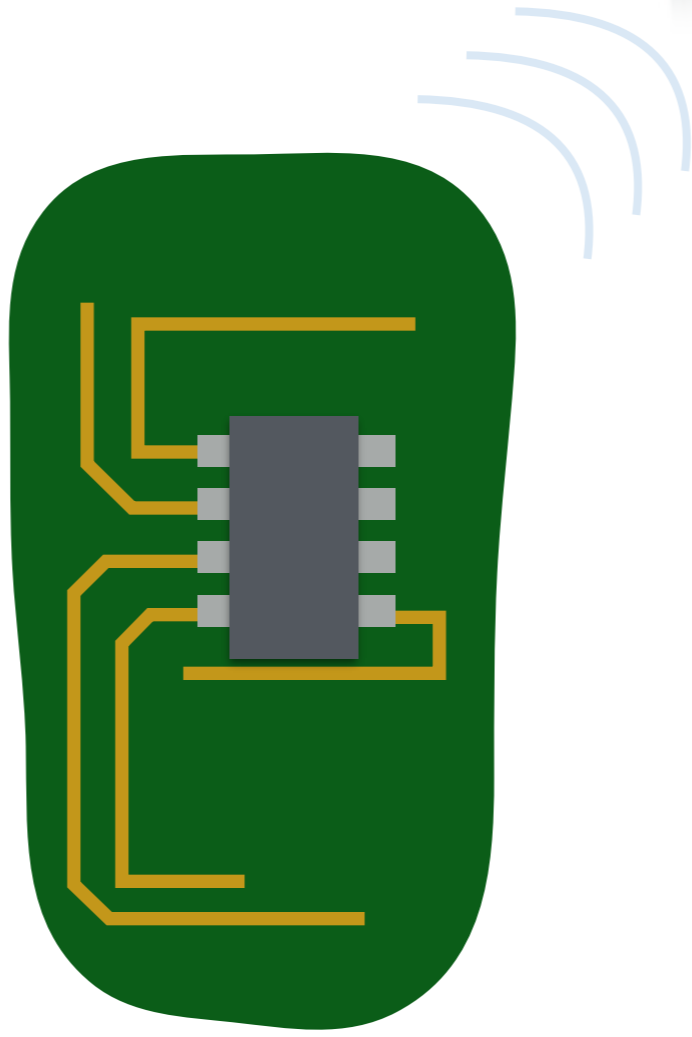


parameter gathering

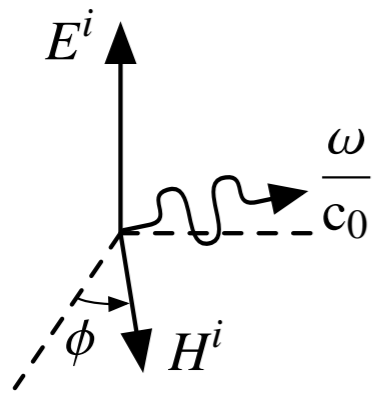
set-up

calculation

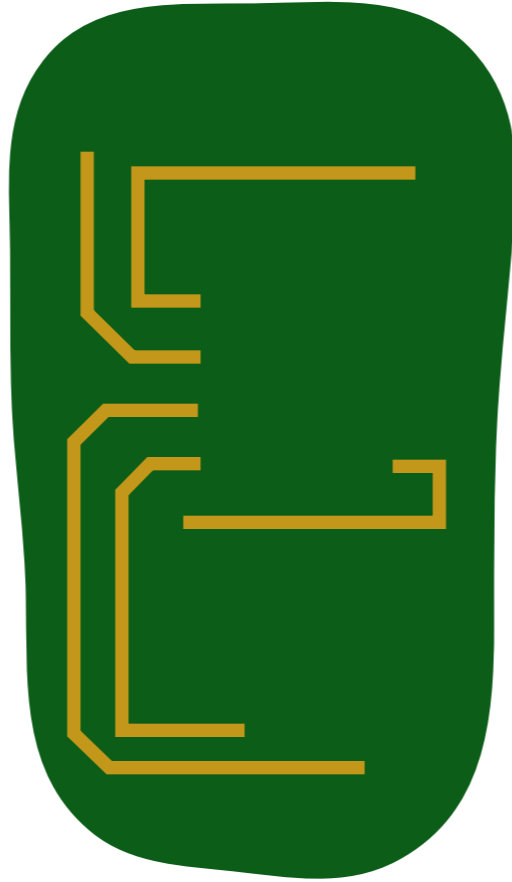




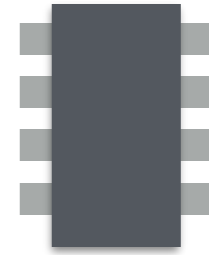
interferer



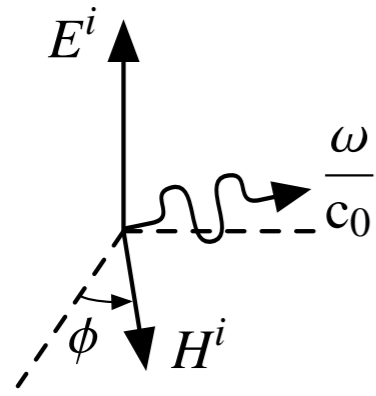
coupling path



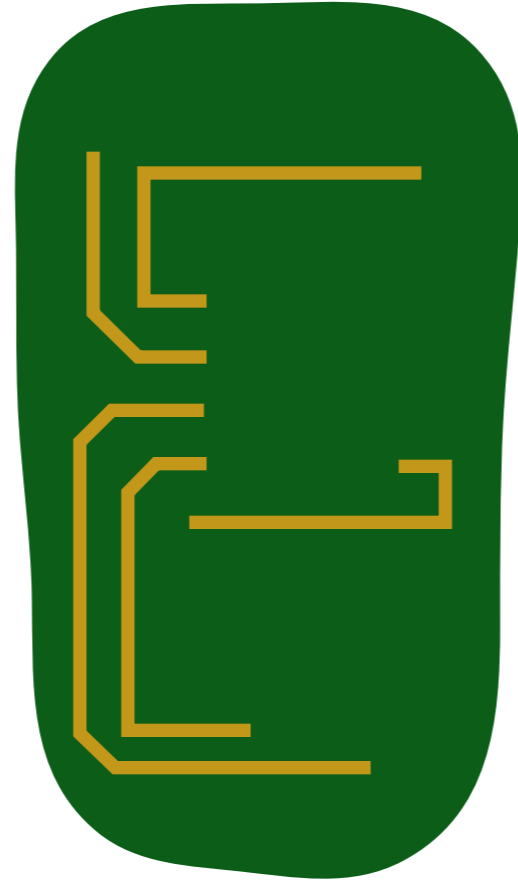
victim

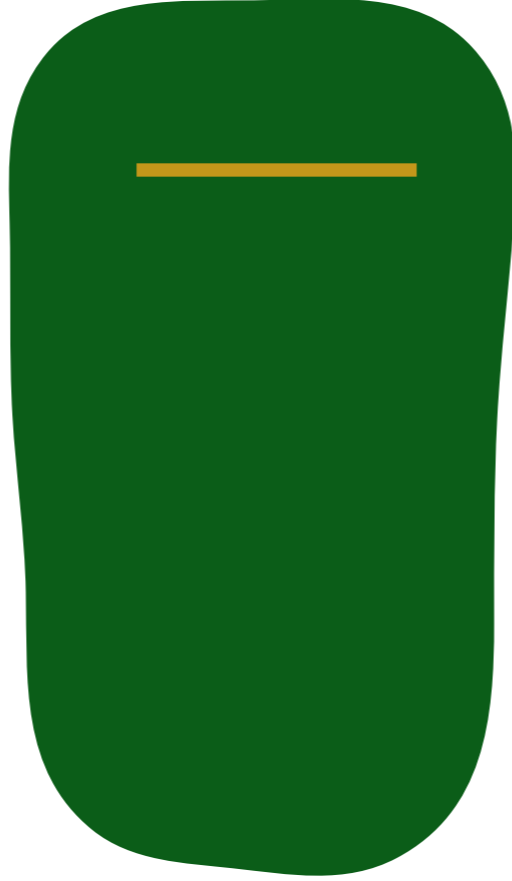


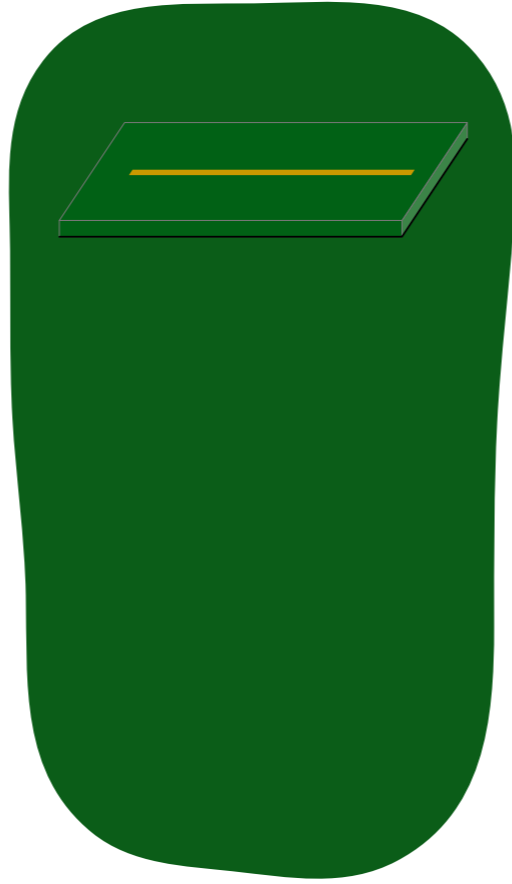
interferer



coupling path





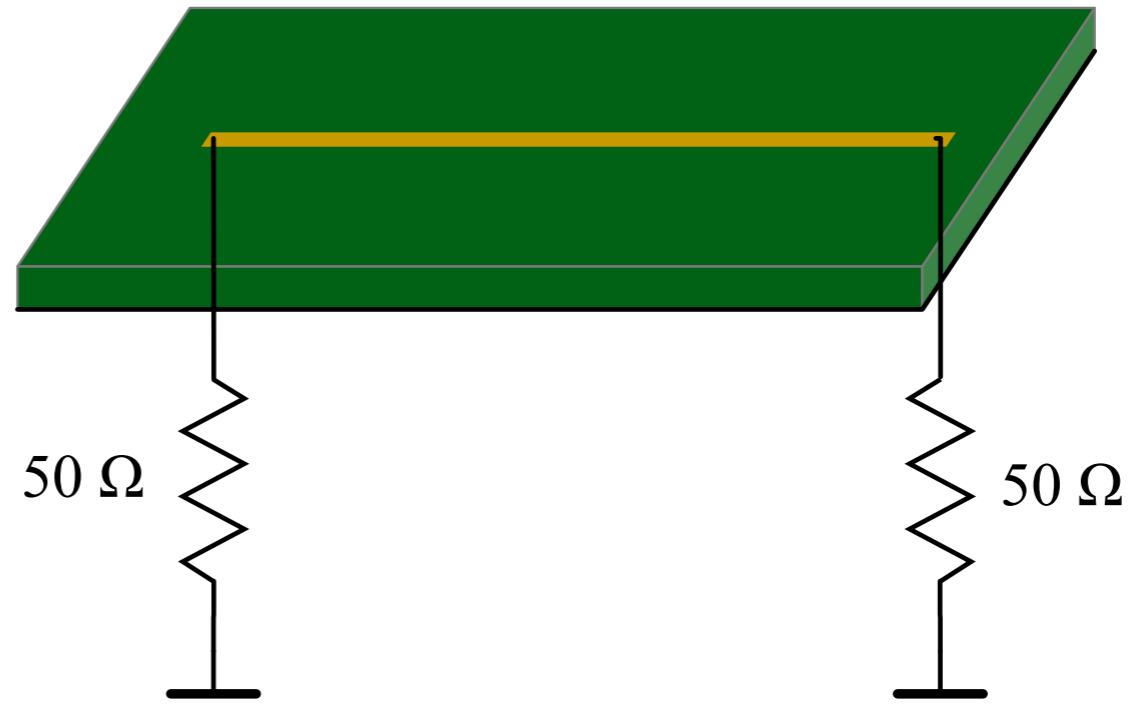
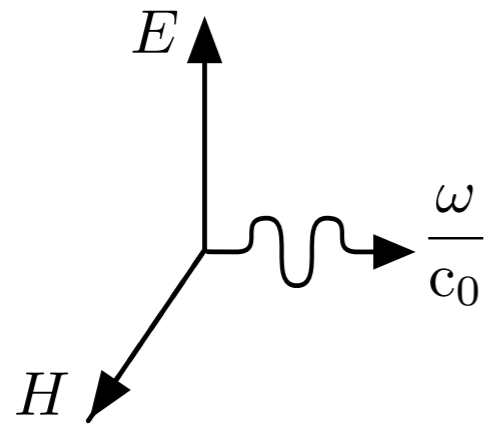




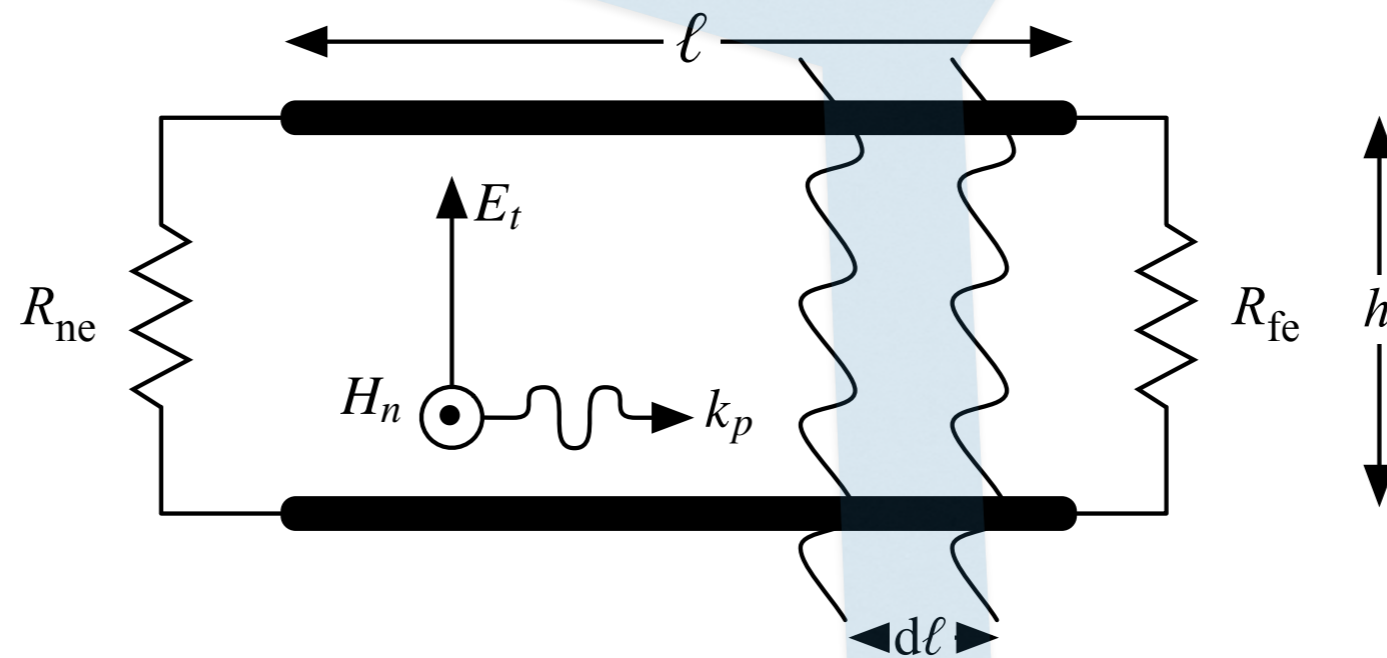
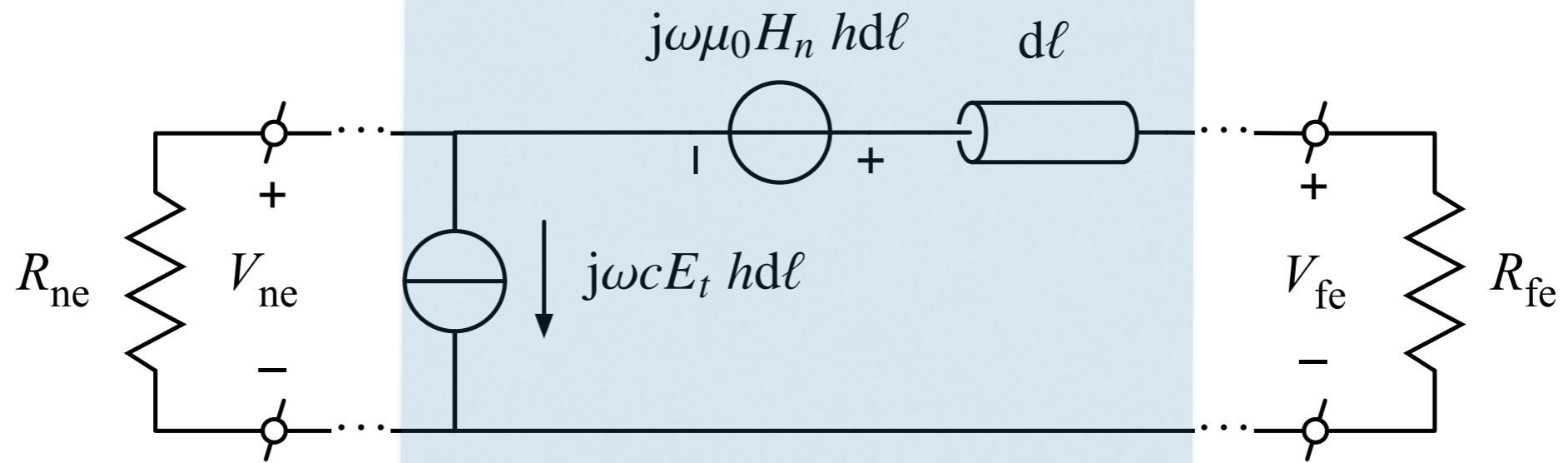
18 GHz

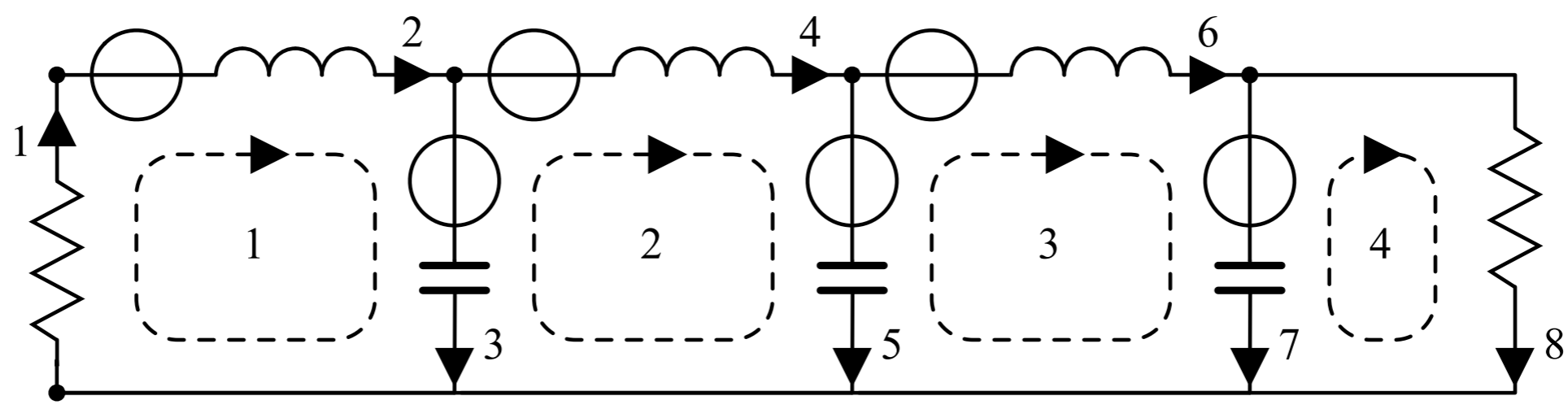
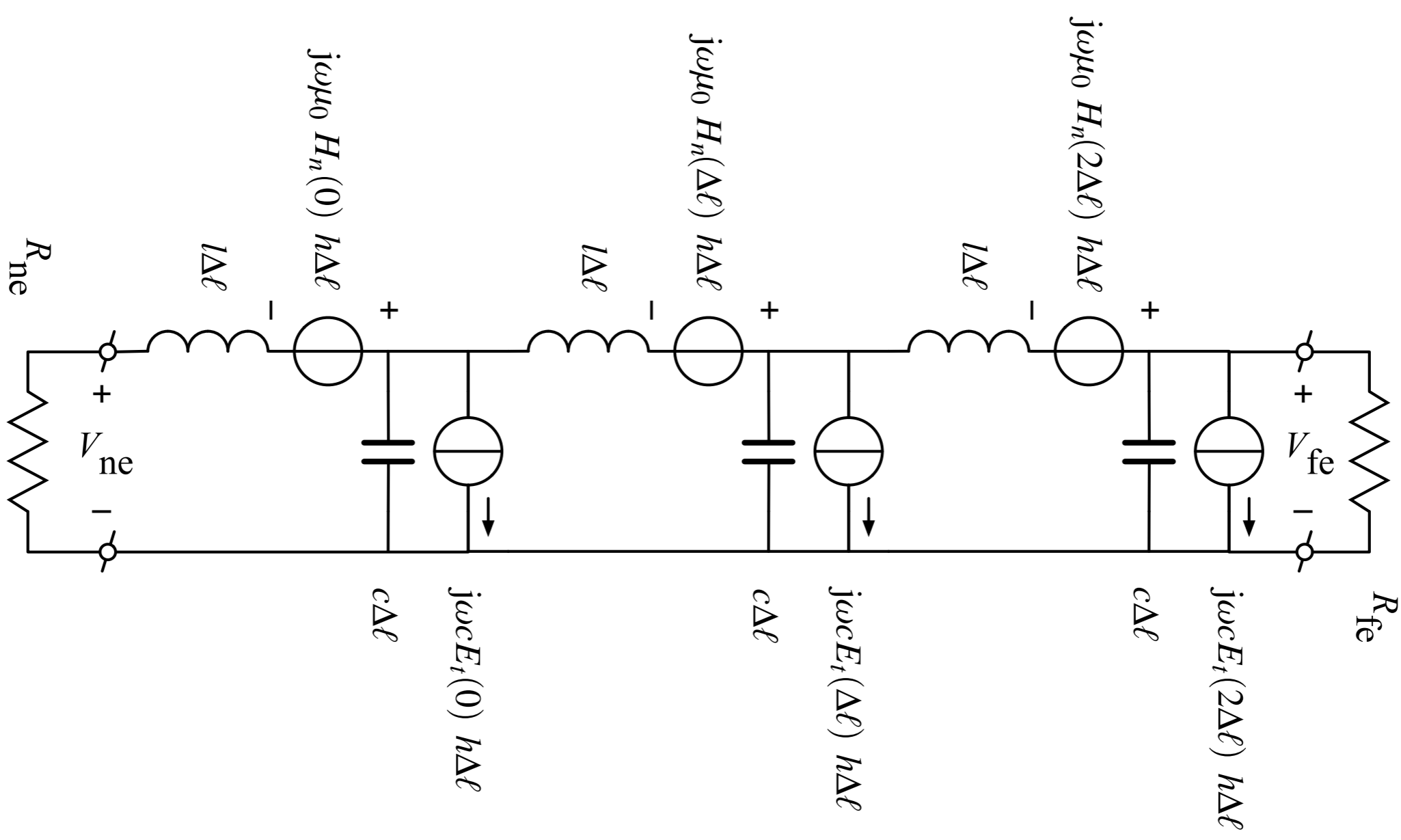
long!

5 cm



Taylor:





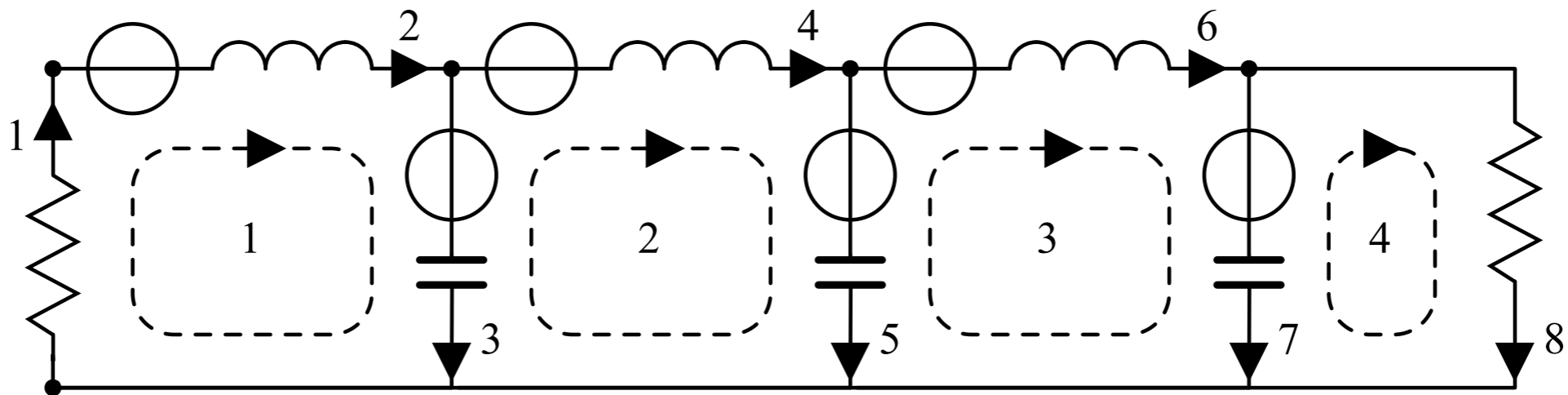
Kron:

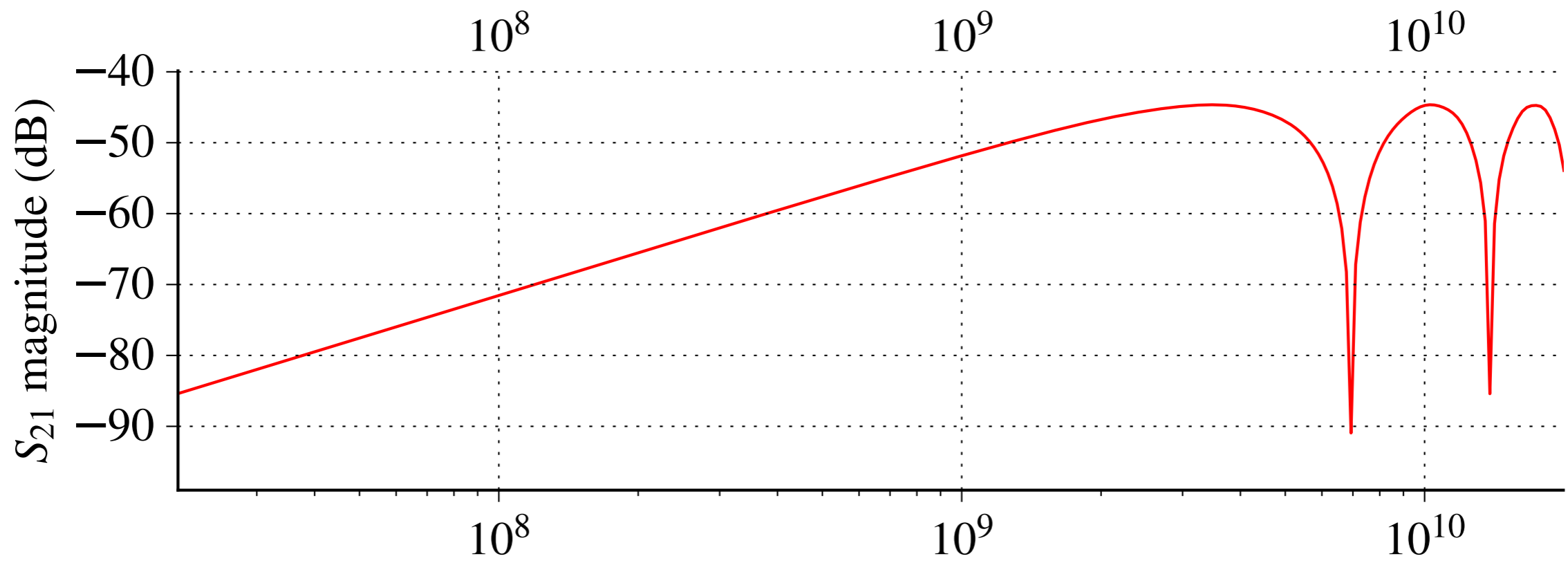
$$\text{diag}(Z) = \left[R_{ne}, j\omega l\Delta\ell, \frac{1}{j\omega c\Delta\ell}, j\omega l\Delta\ell, \frac{1}{j\omega c\Delta\ell}, j\omega l\Delta\ell, \frac{1}{j\omega c\Delta\ell}, R_{fe} \right]$$

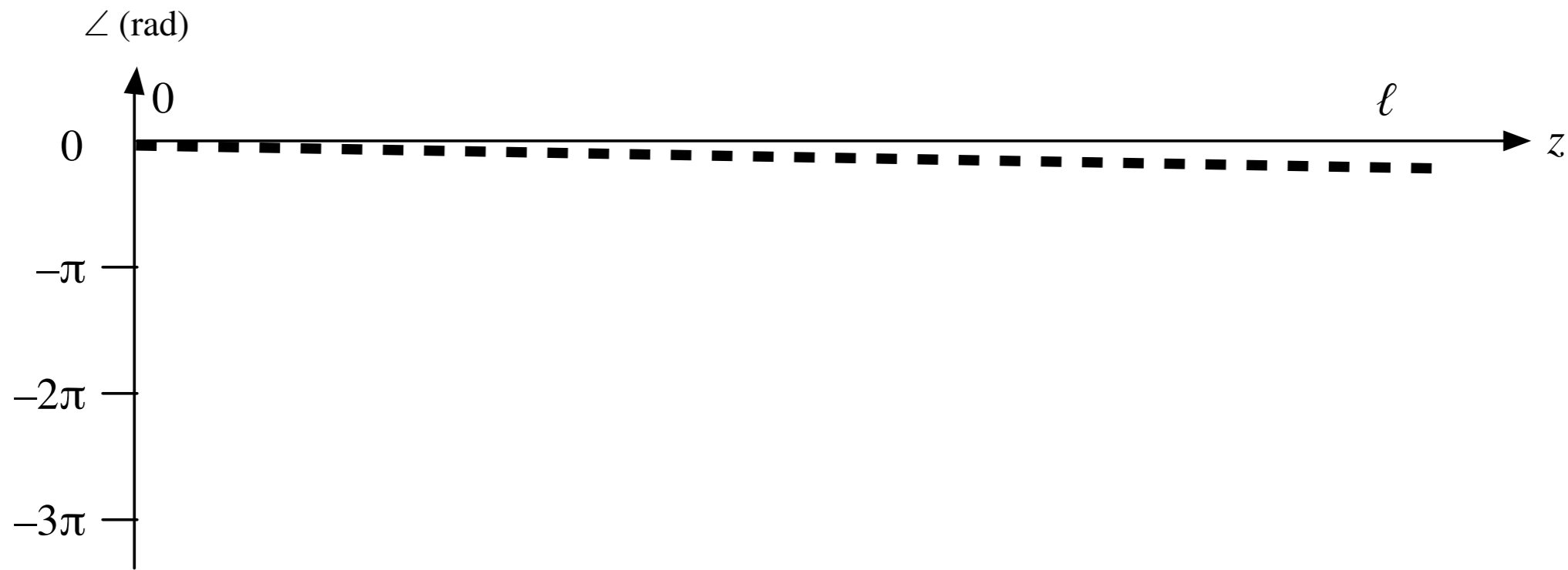
$$e = \begin{bmatrix} 0 \\ H_n(0) \\ 0 \\ H_n(\Delta\ell) \\ 0 \\ H_n(2\Delta\ell) \\ 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} j\omega\mu_0 h\Delta\ell \\ h \end{bmatrix}$$

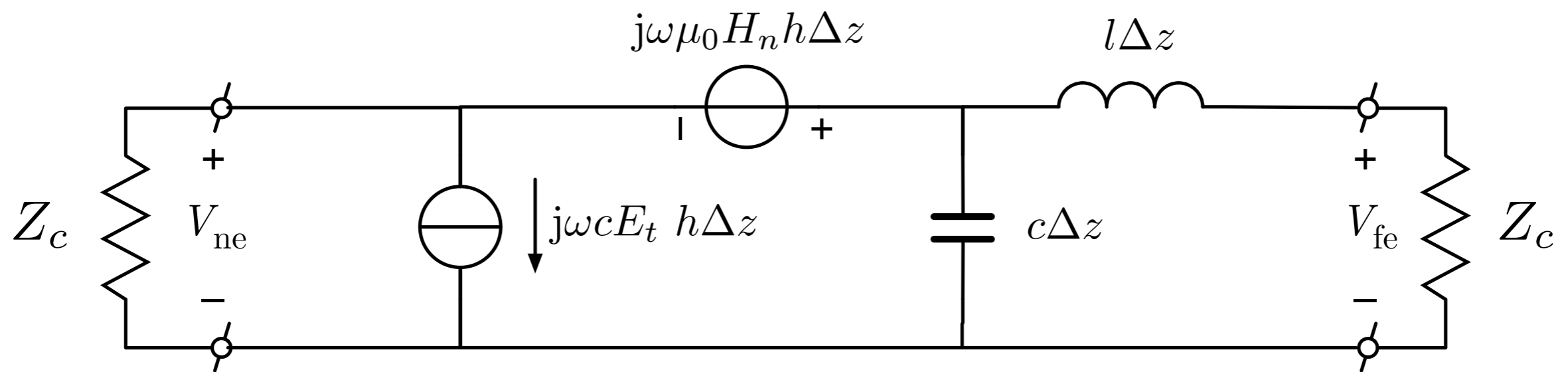
$$L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & -1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

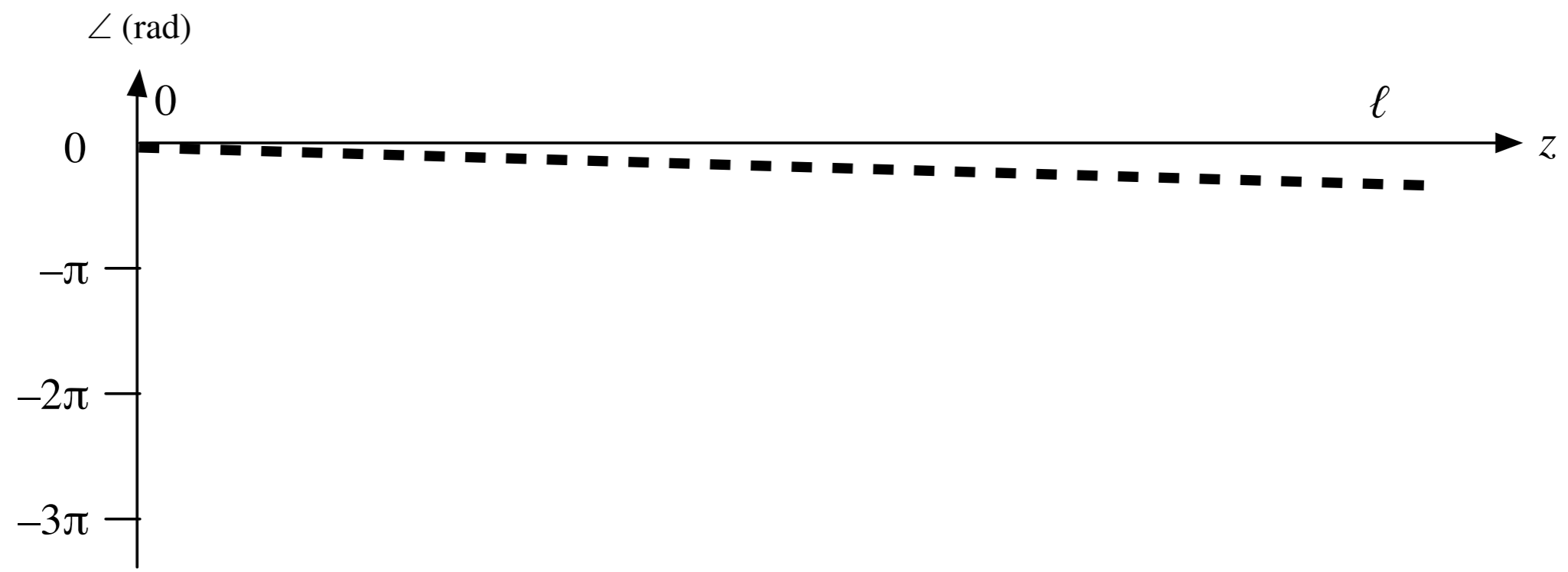




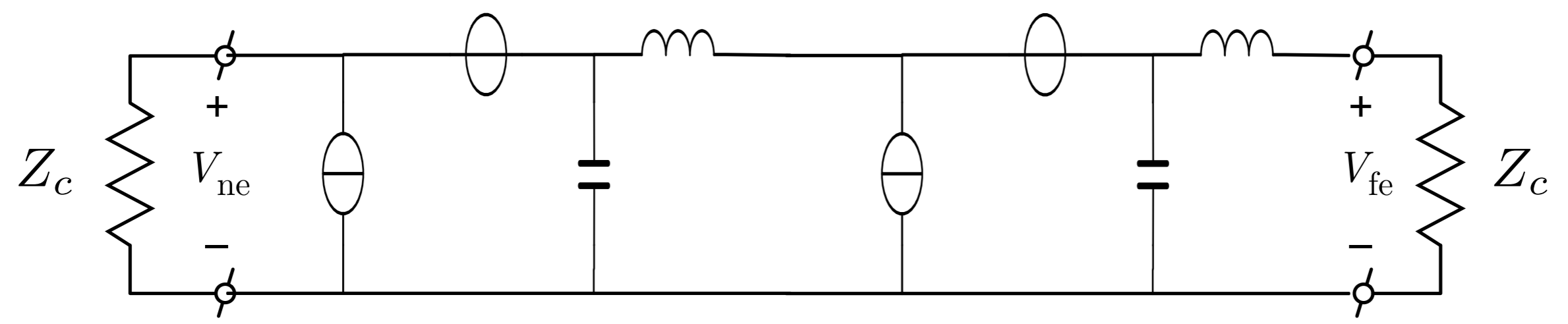


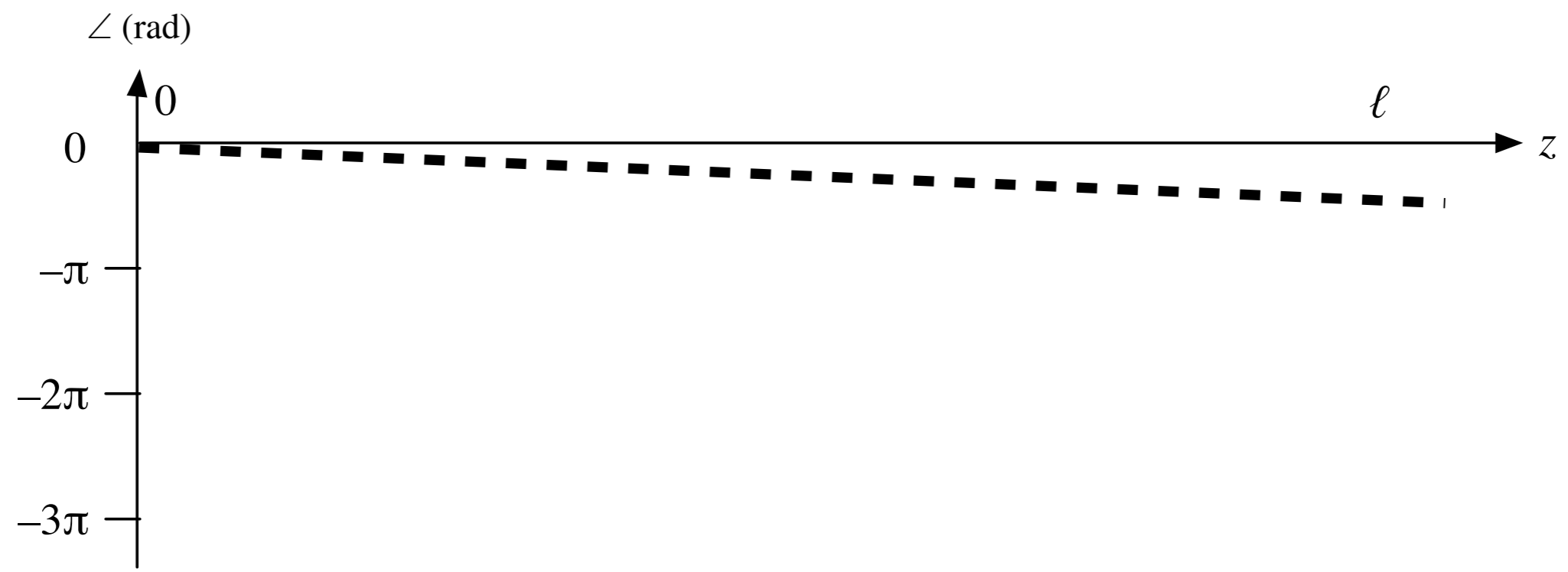
--- incident wave



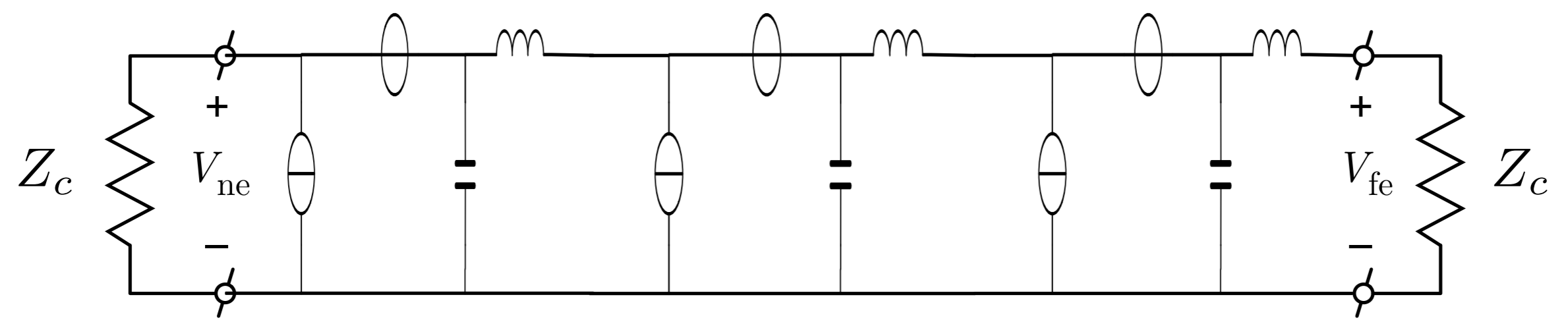


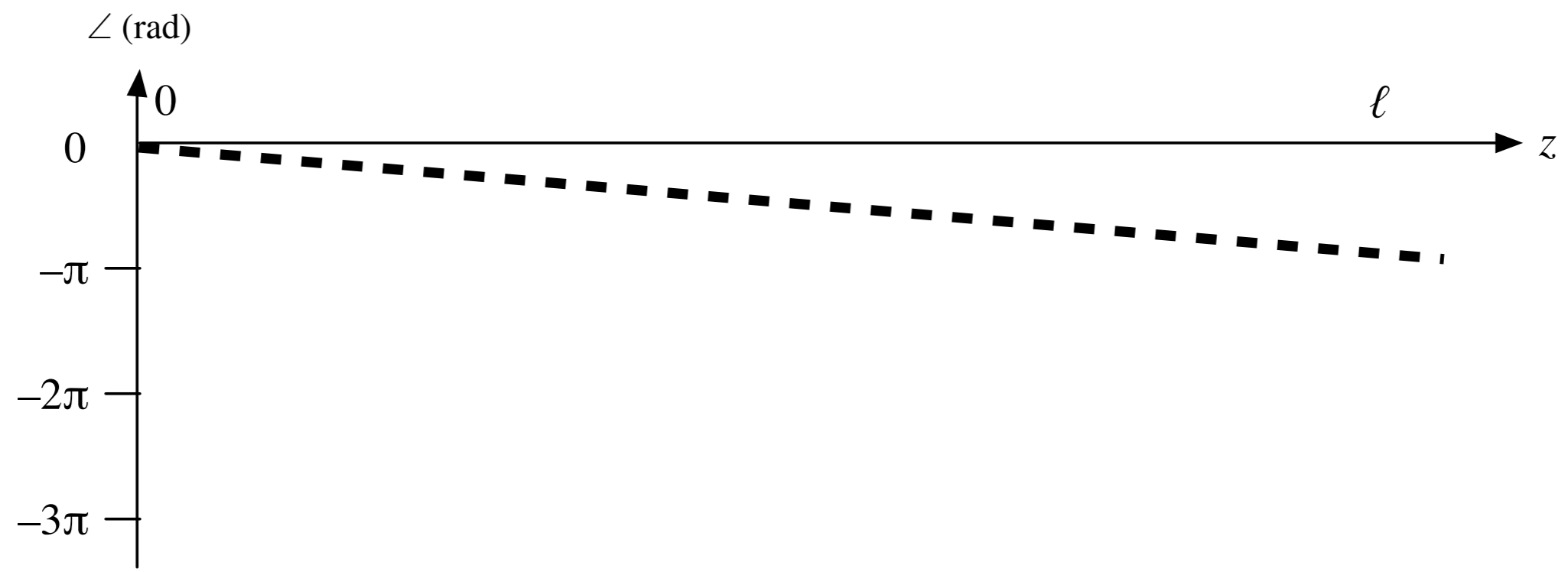
--- incident wave



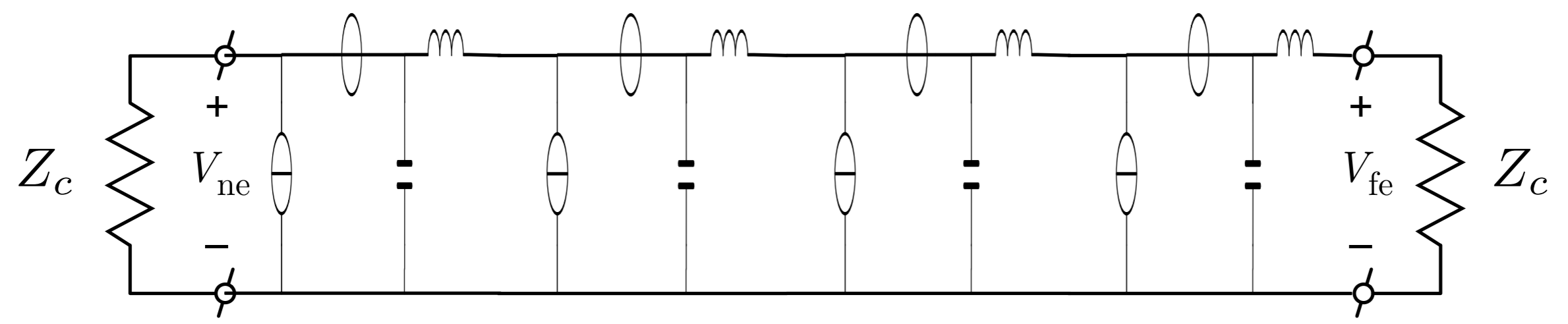


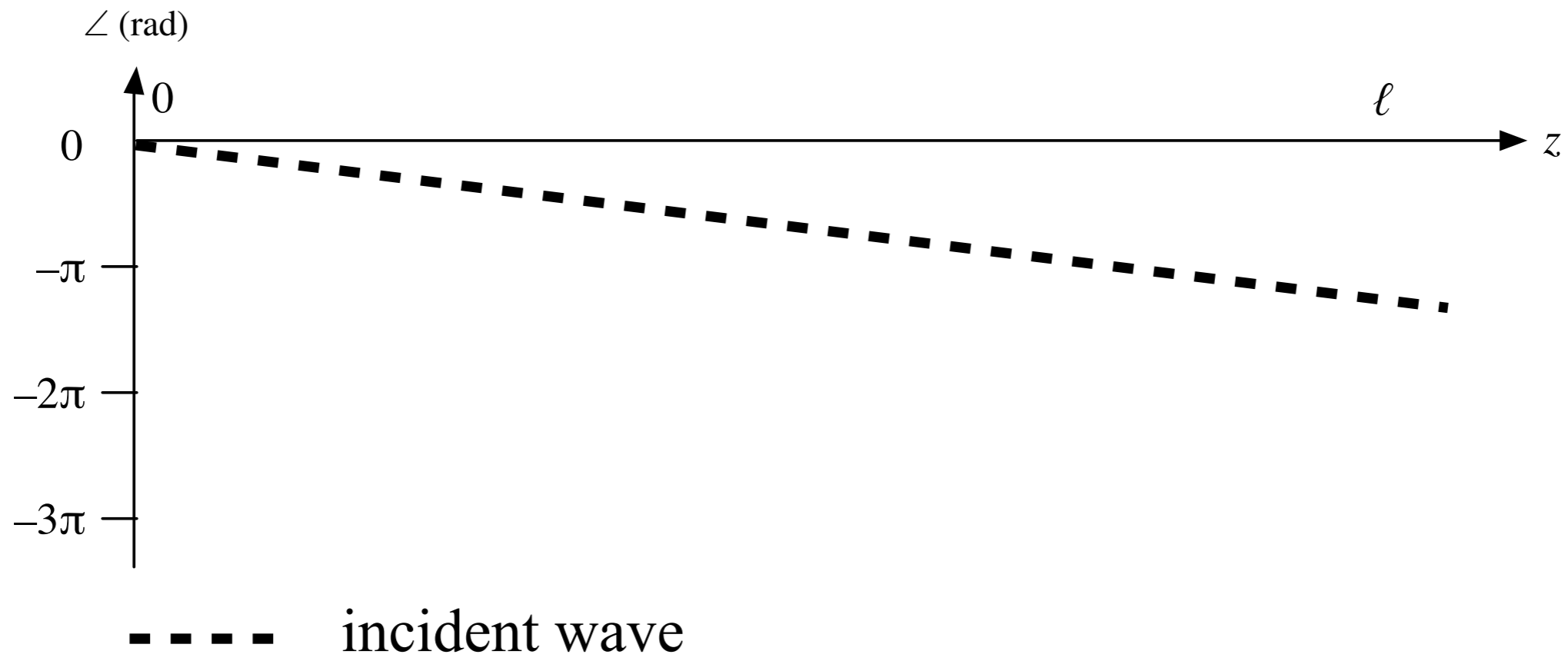
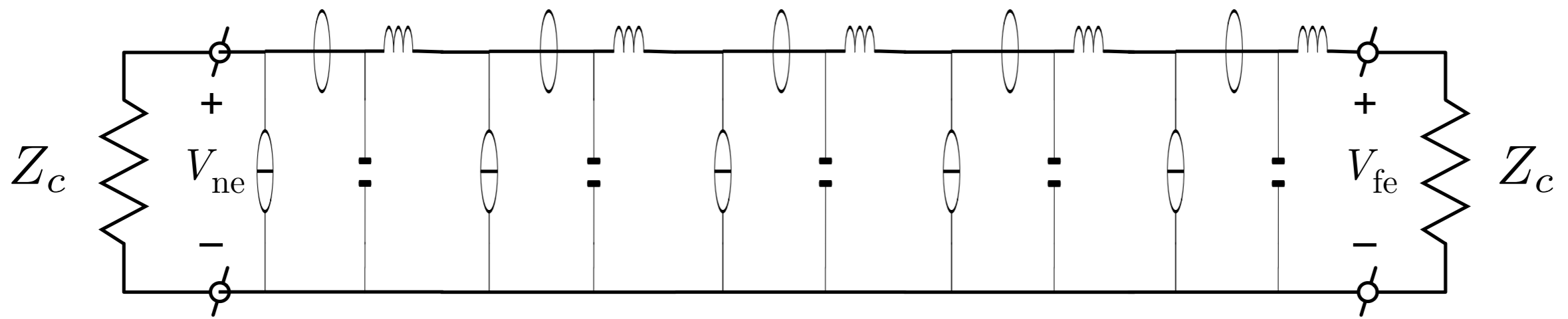
--- incident wave

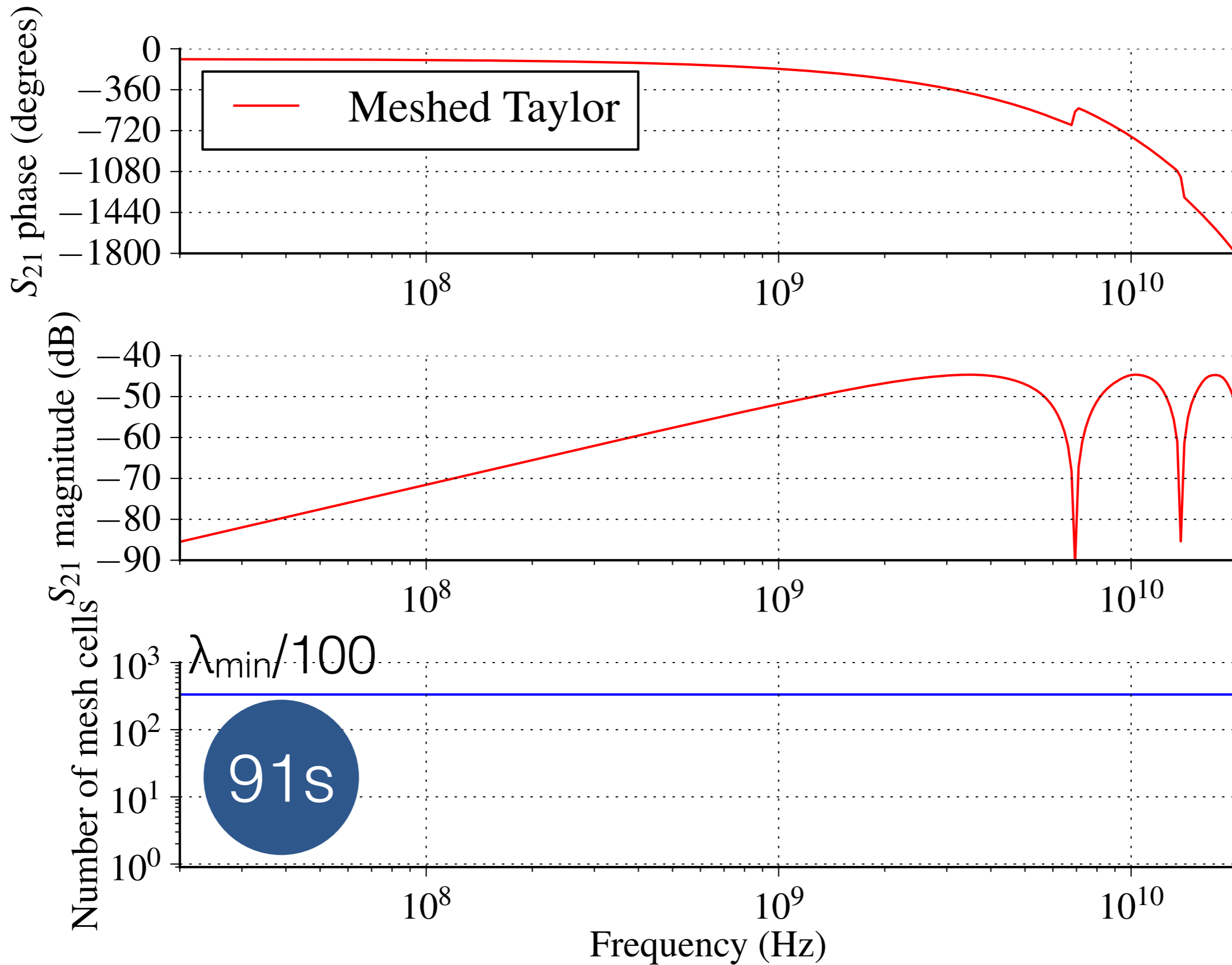


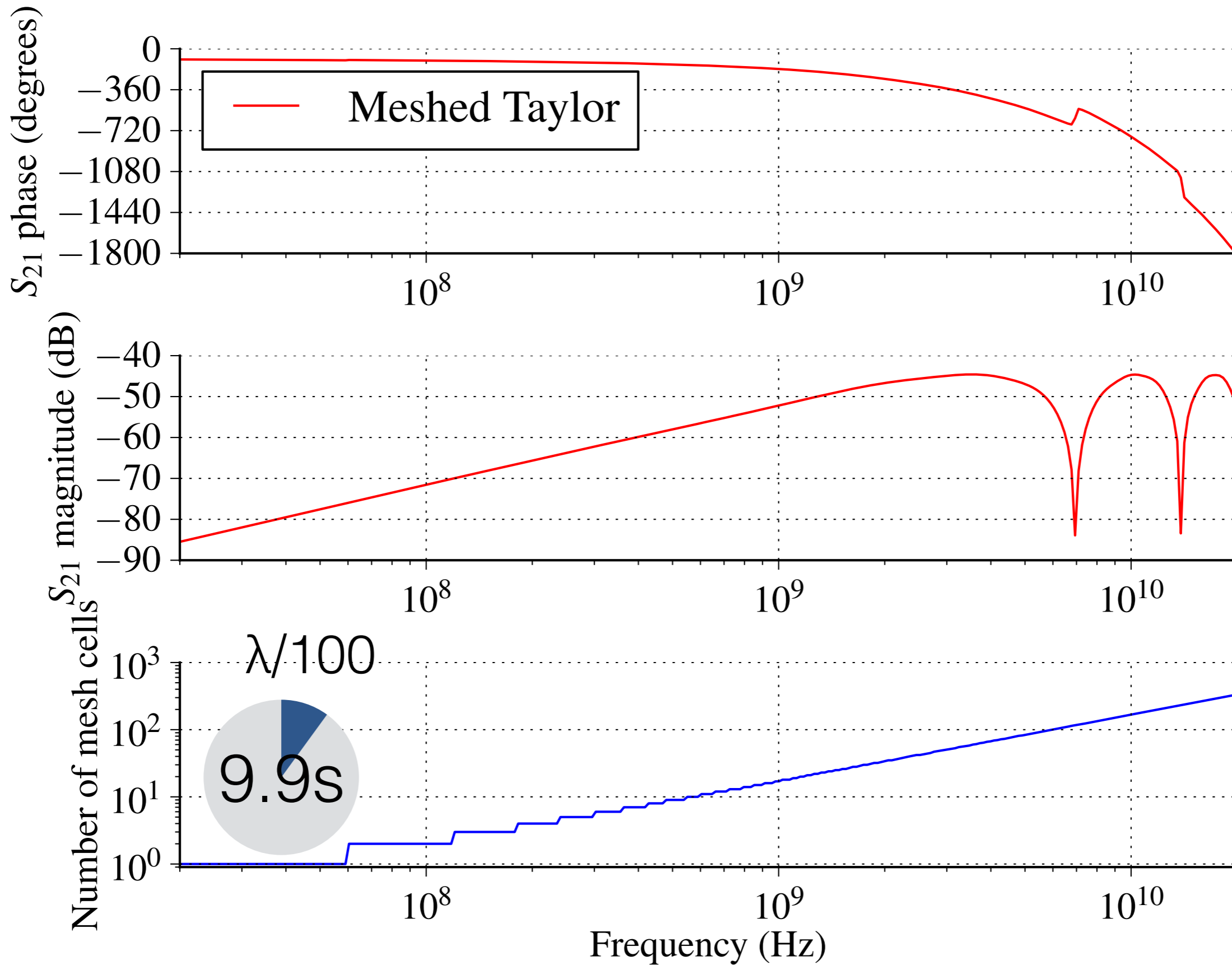


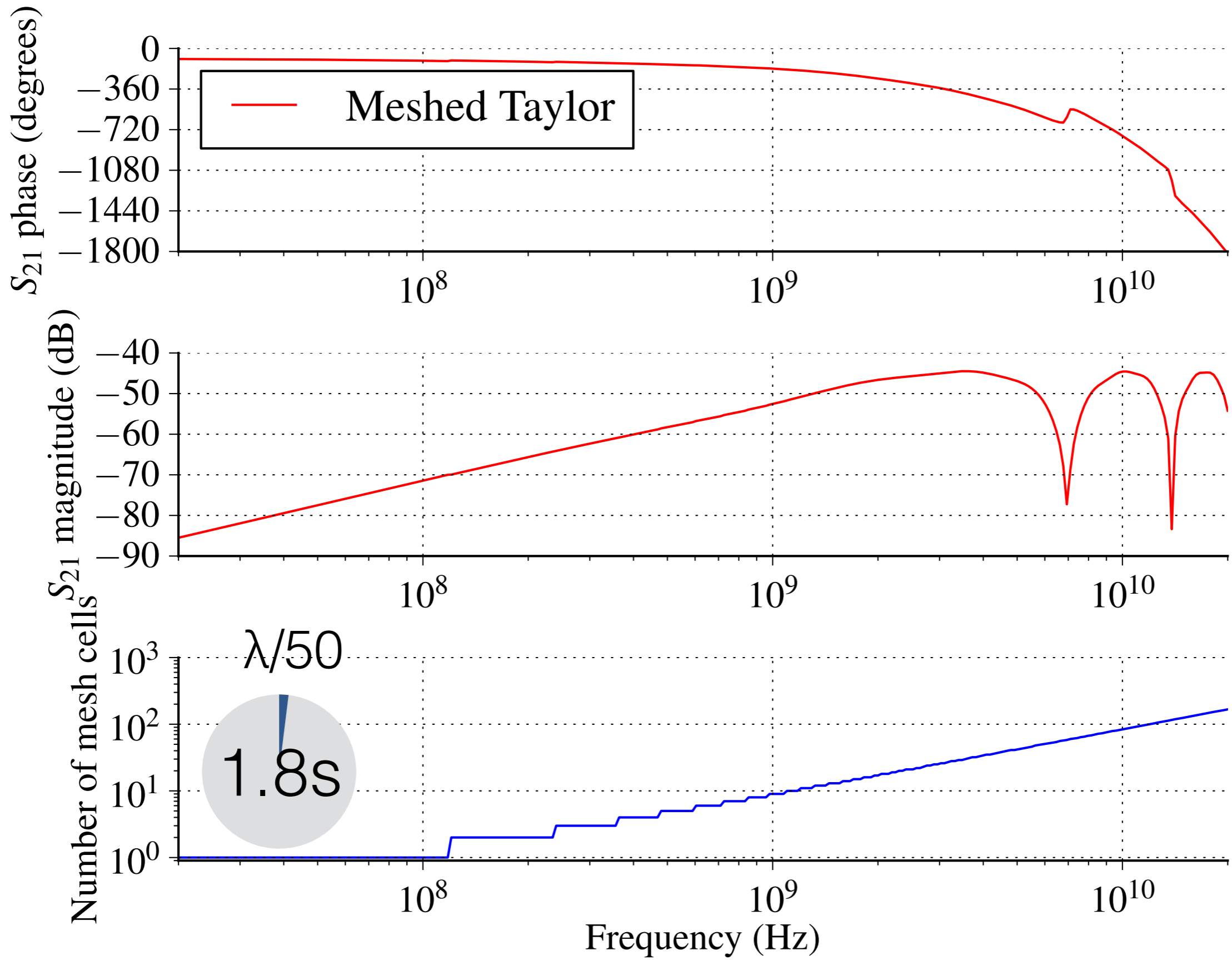
--- incident wave

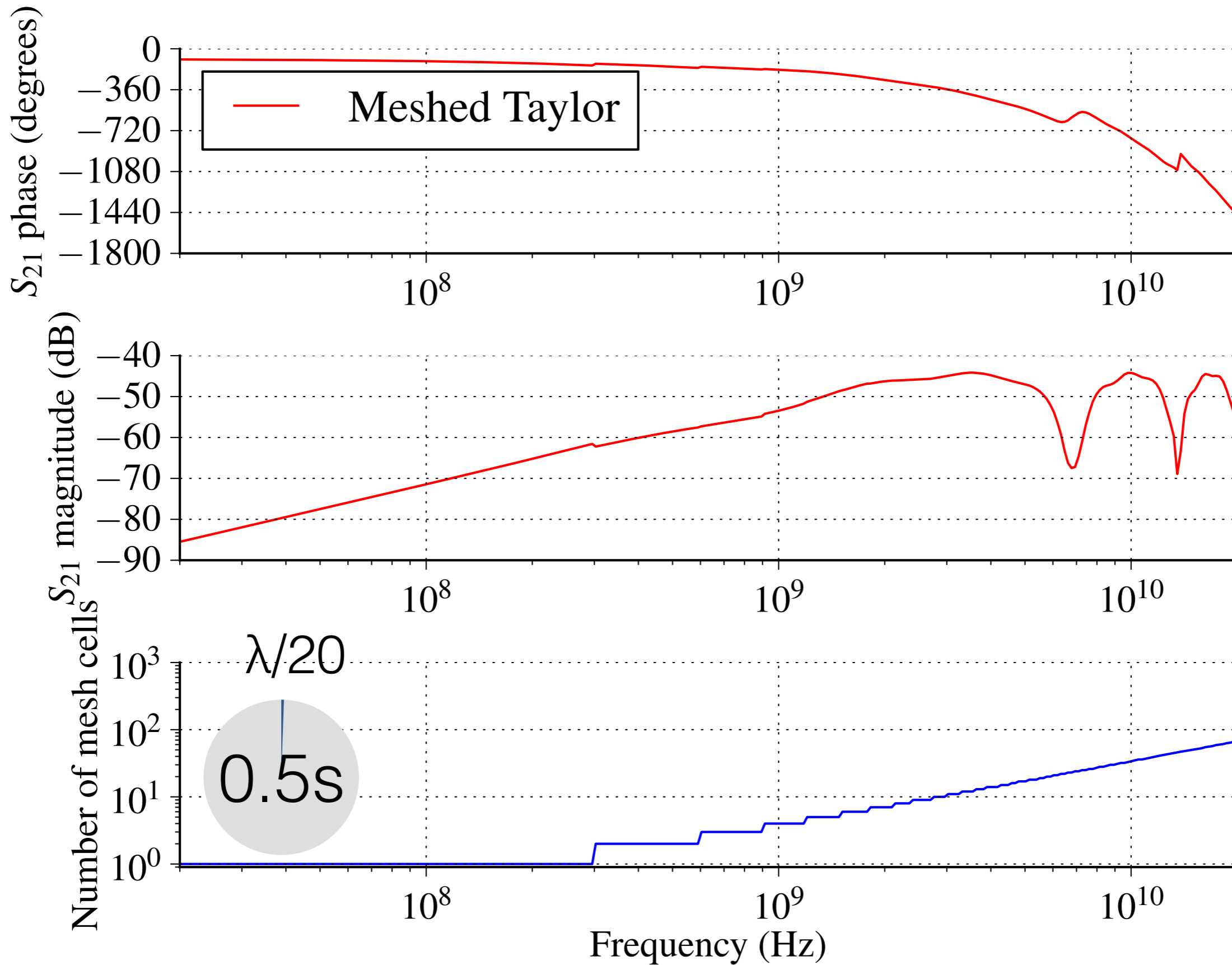


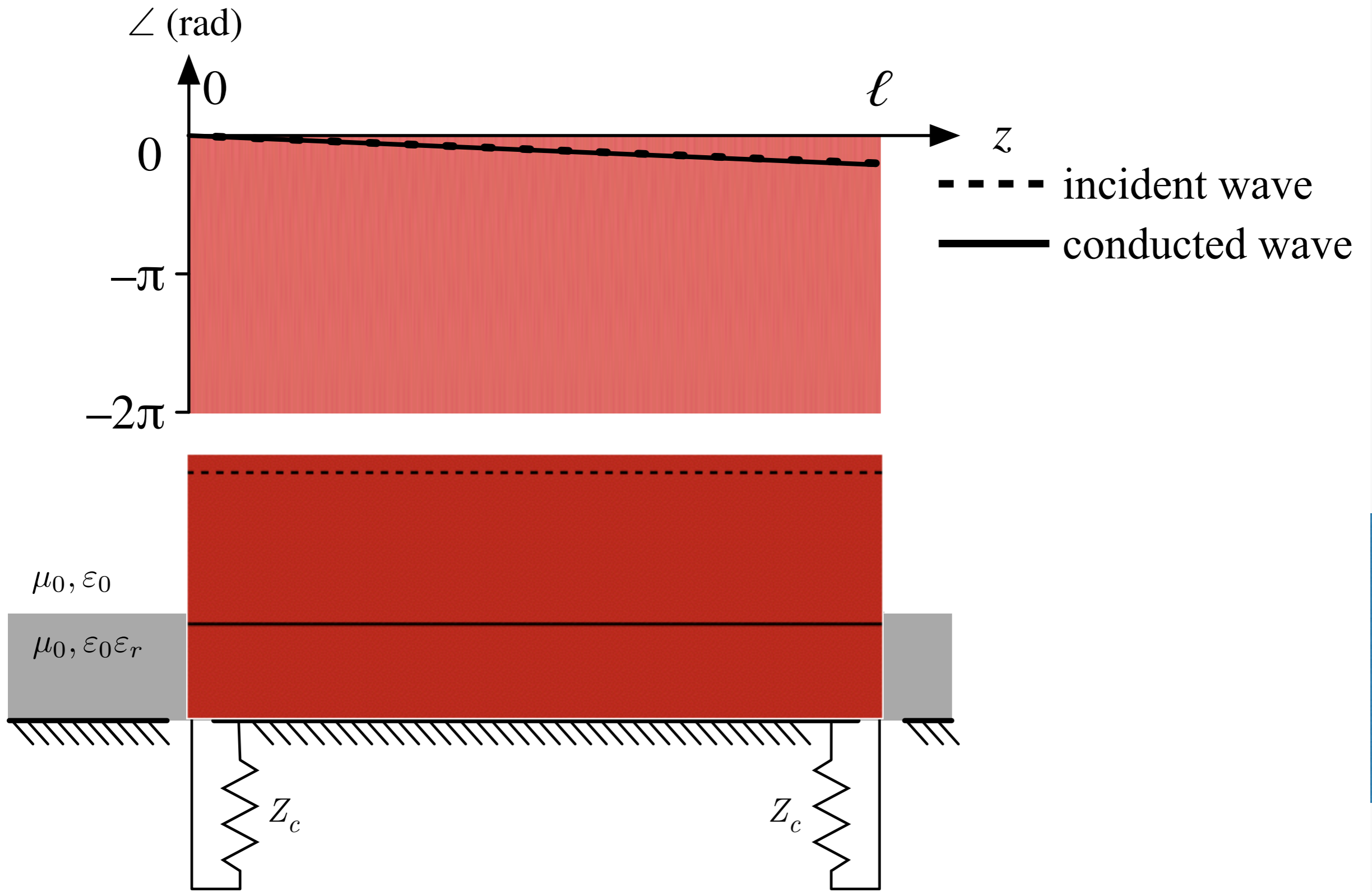


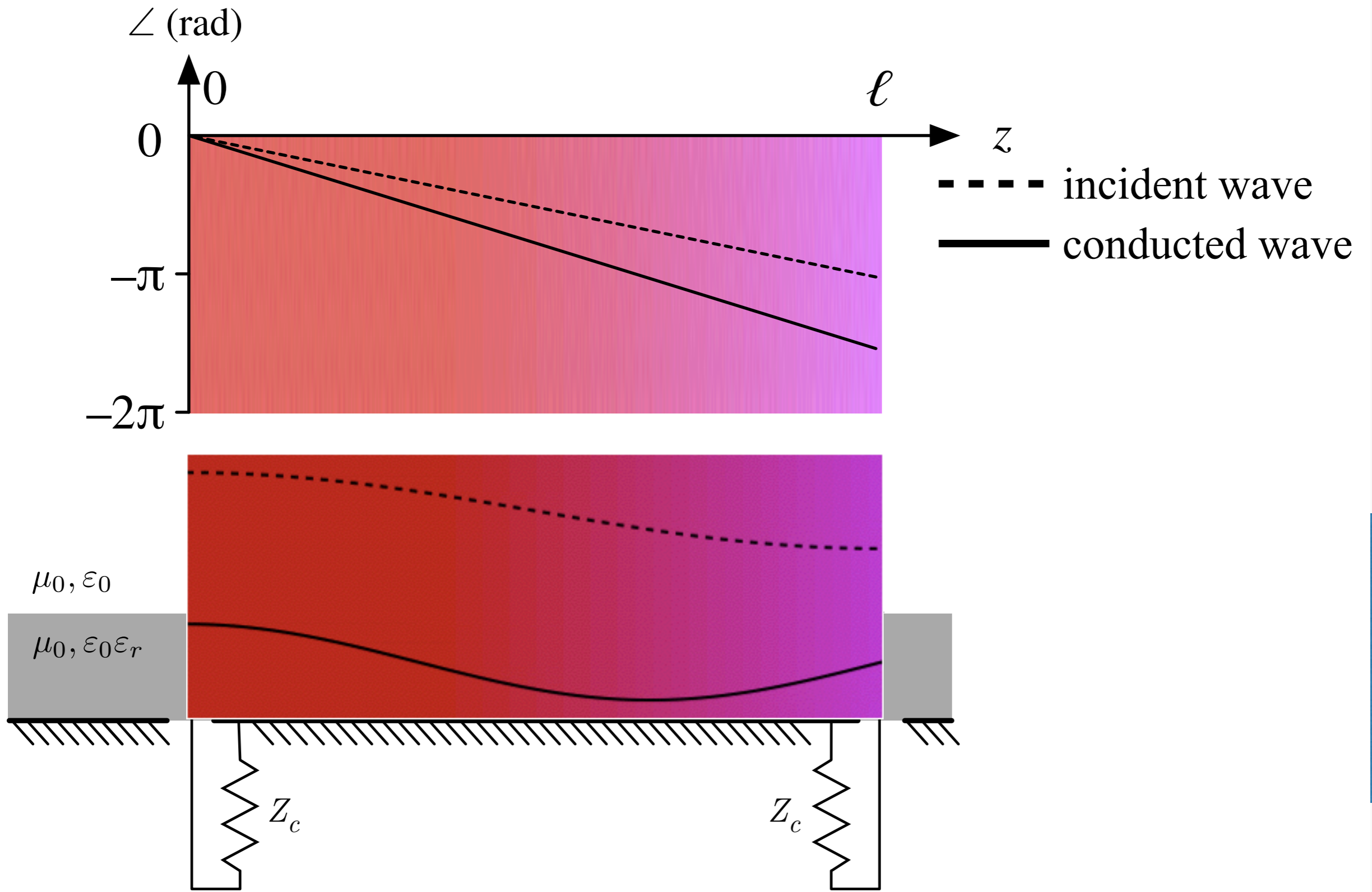


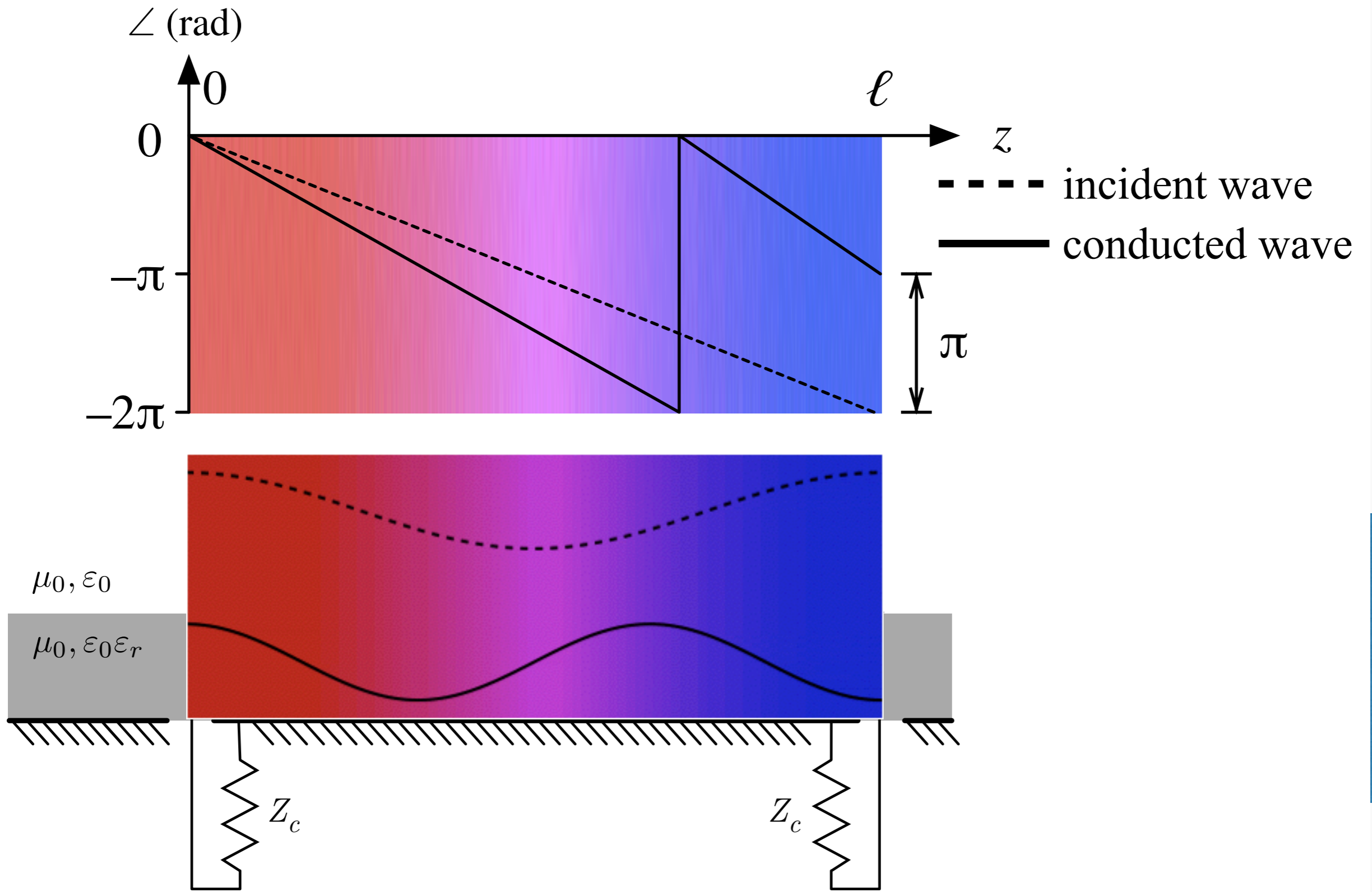


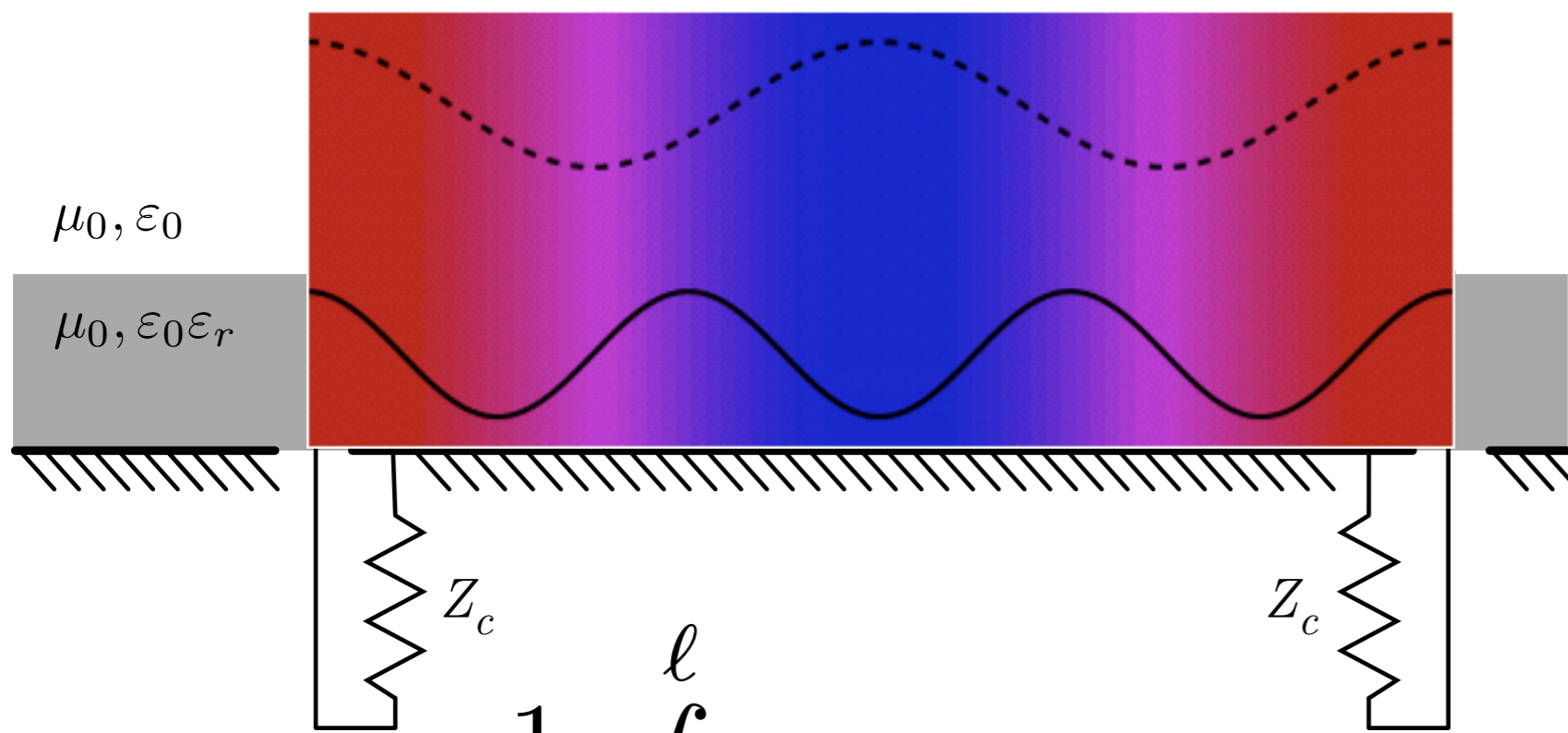
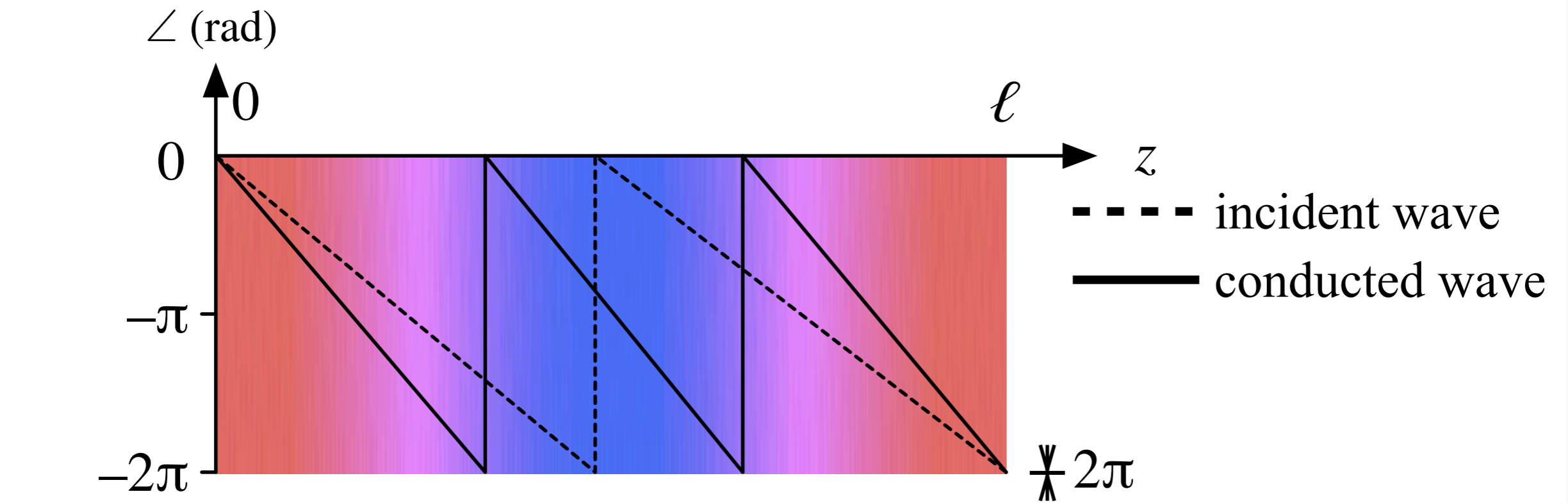




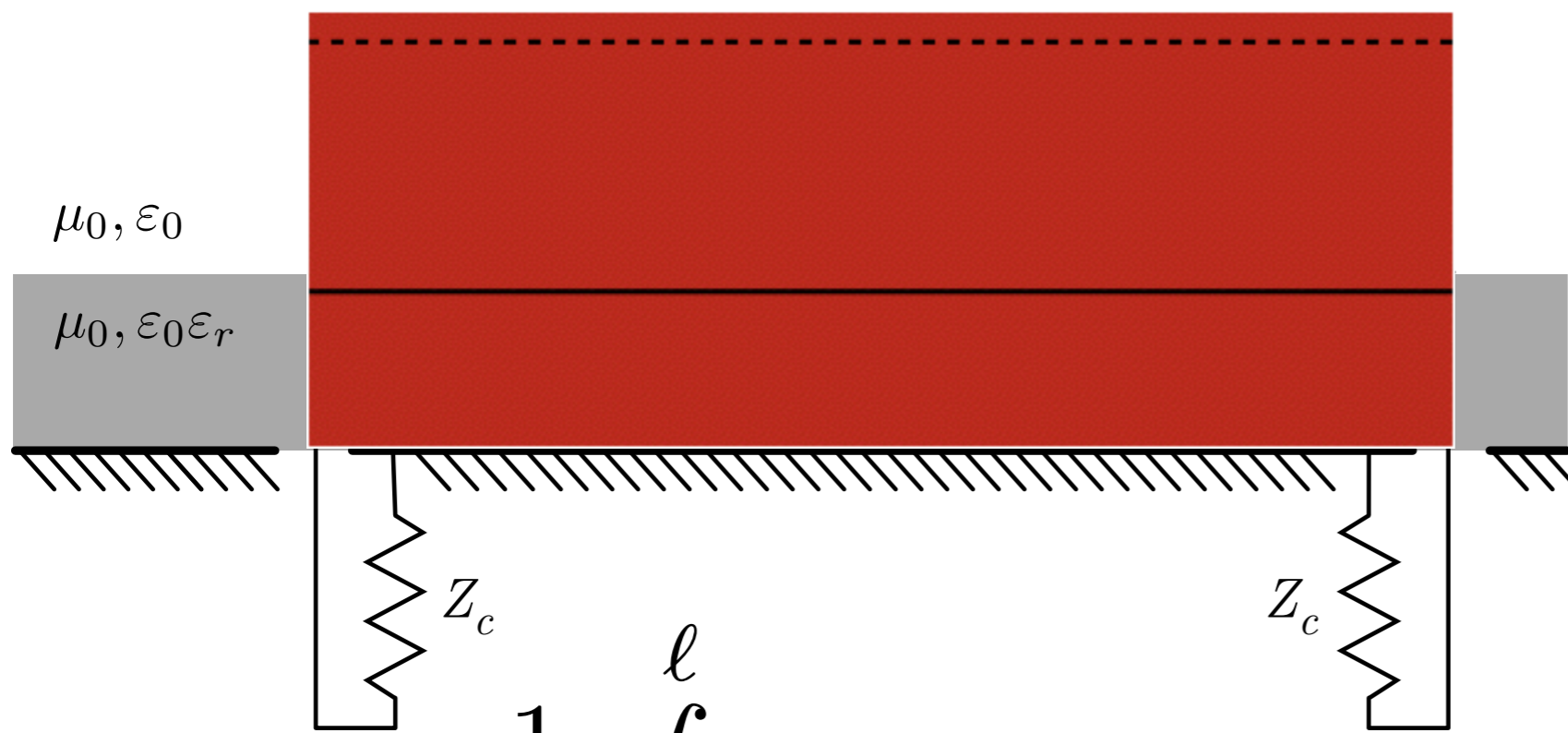
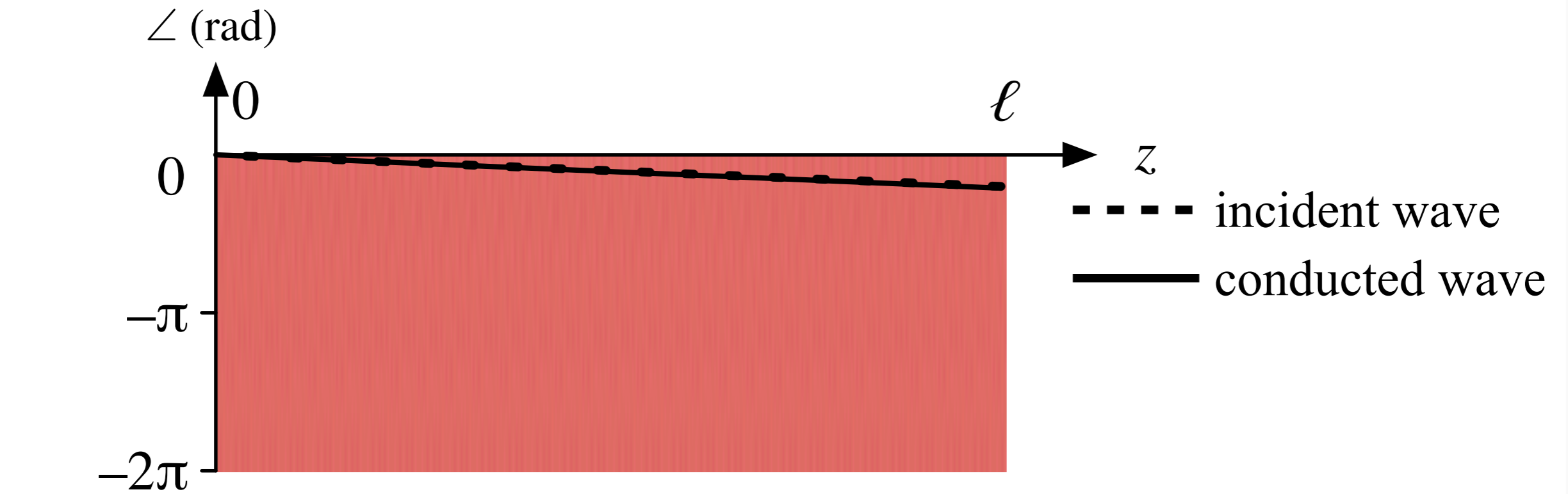




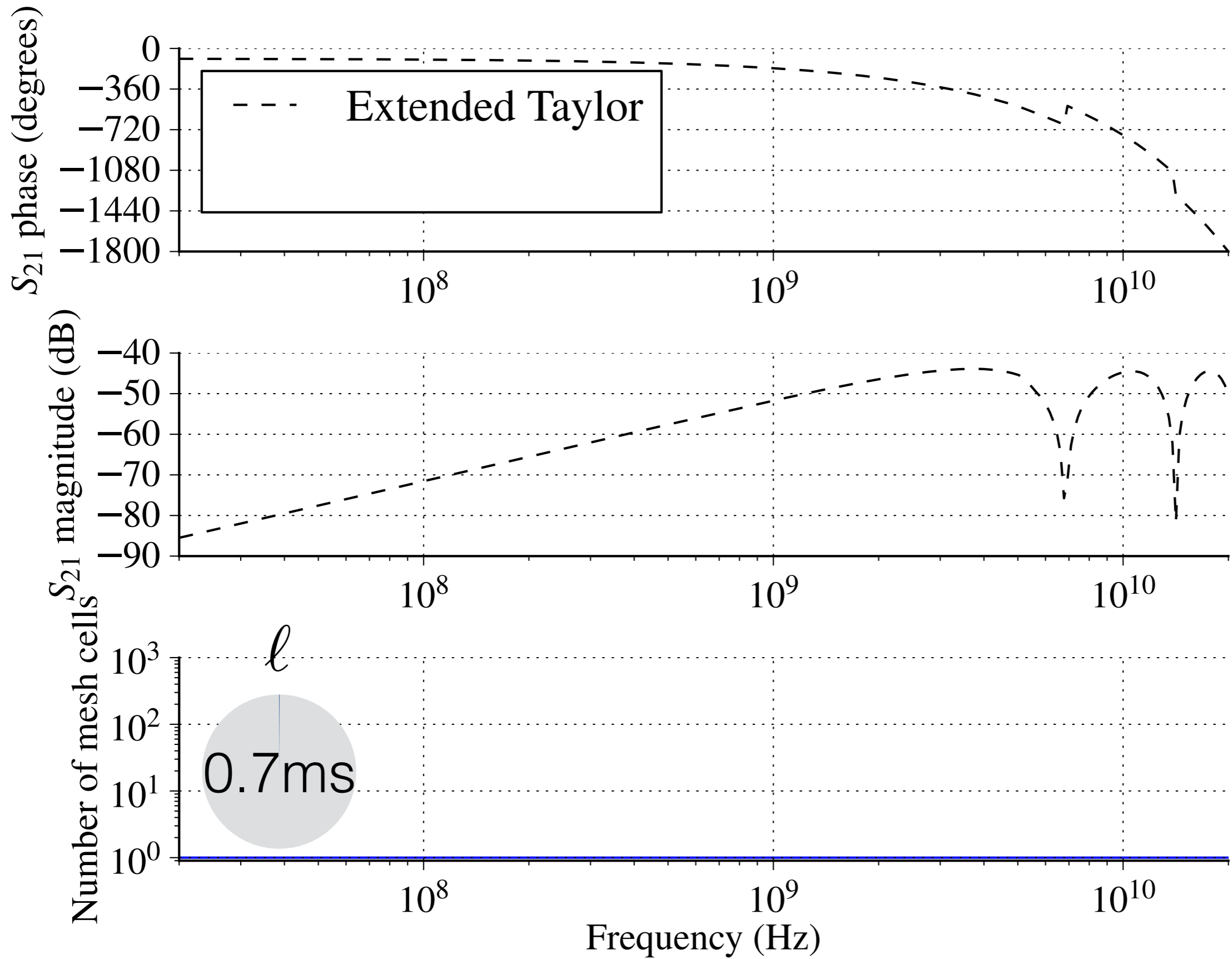


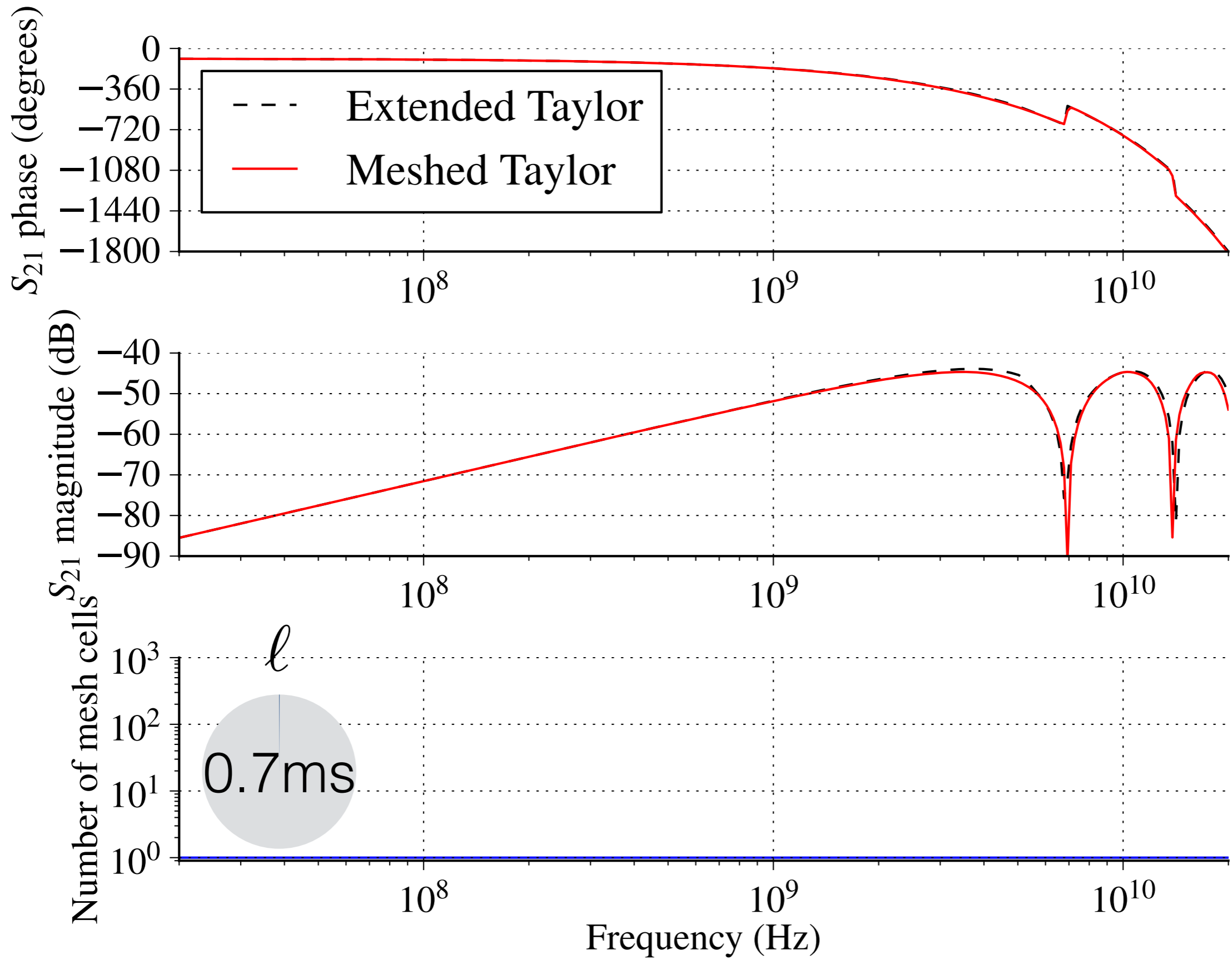


$$K = \frac{1}{\ell} \int_0^{\ell} \text{incident} \cdot \text{wave}^* dz = 0$$

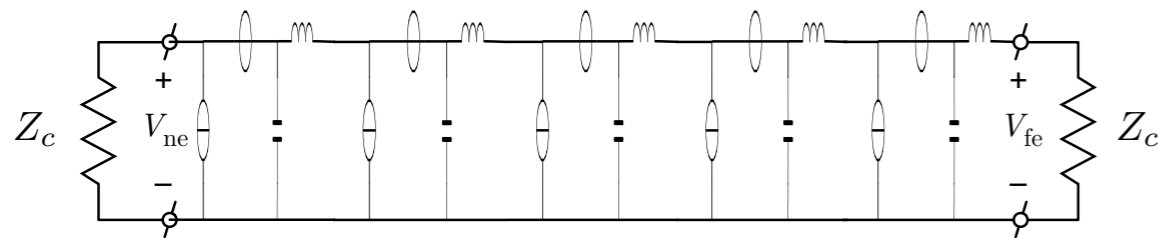


$$K = \frac{1}{\ell} \int_0^{\ell} \text{incident} \cdot \text{wave}^* dz = 1$$



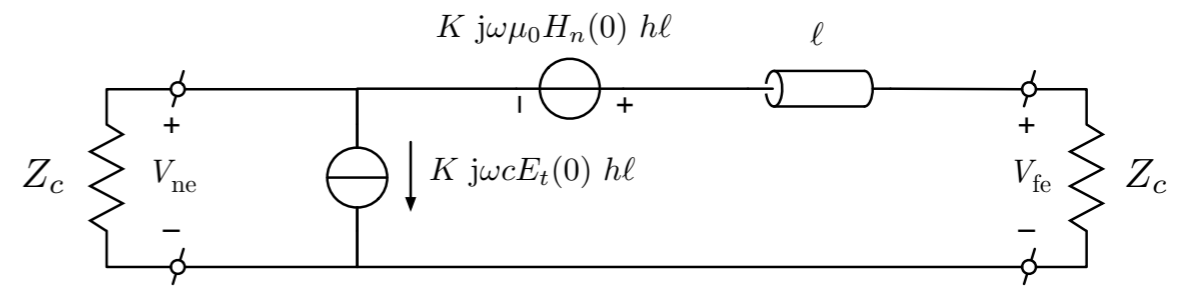


Meshed

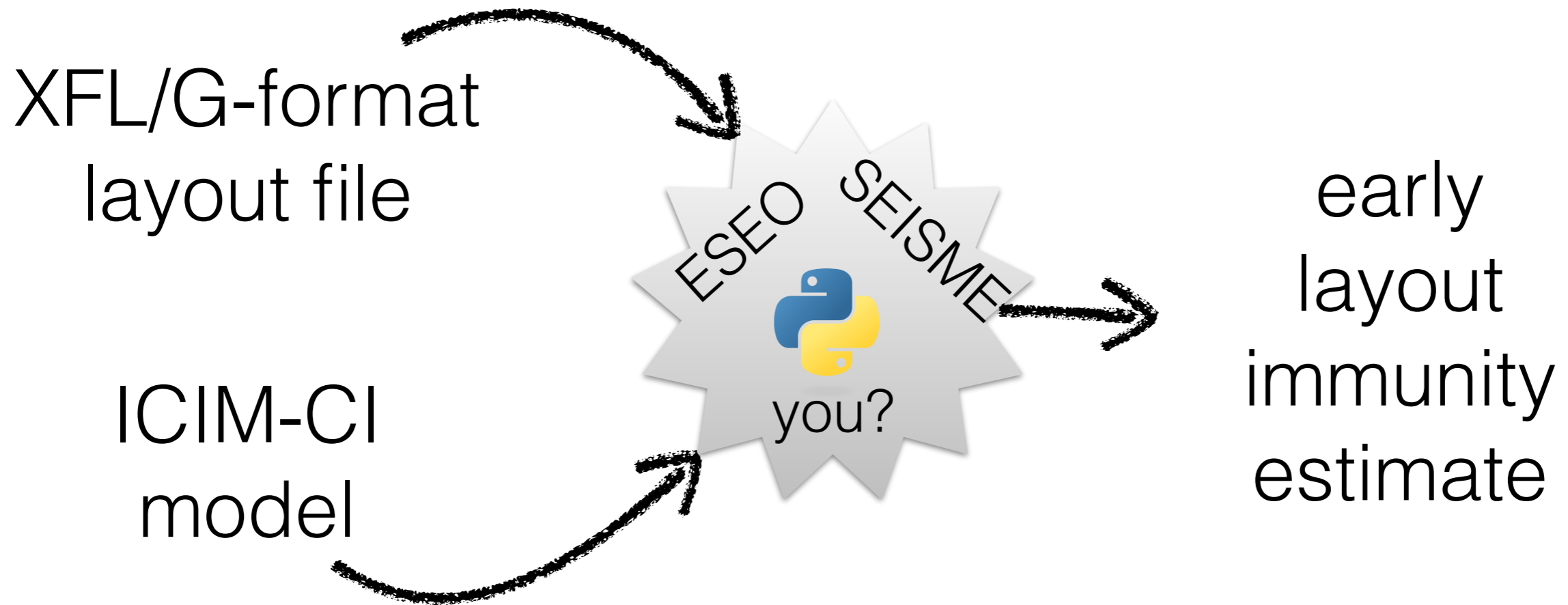
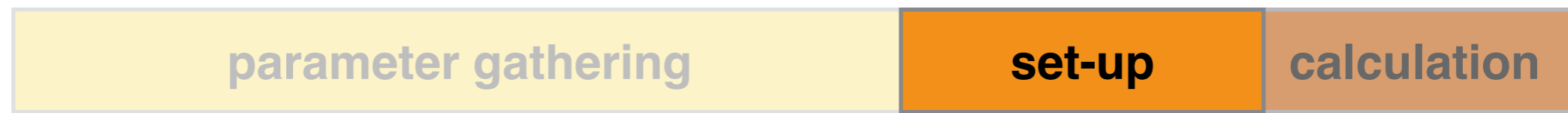
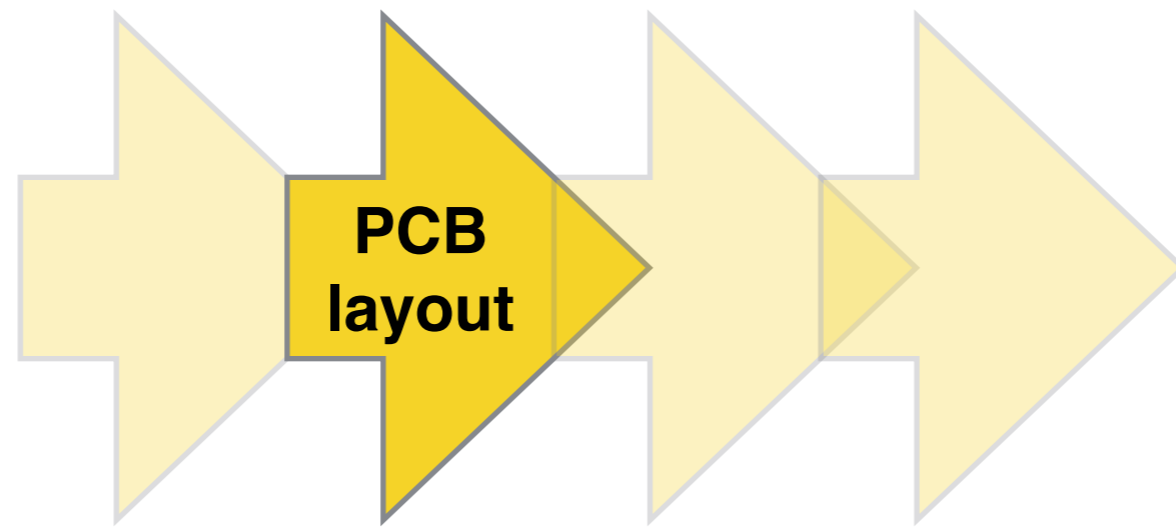


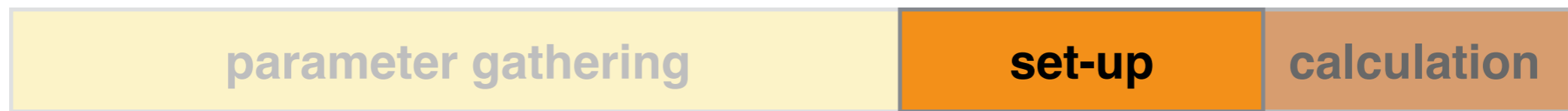
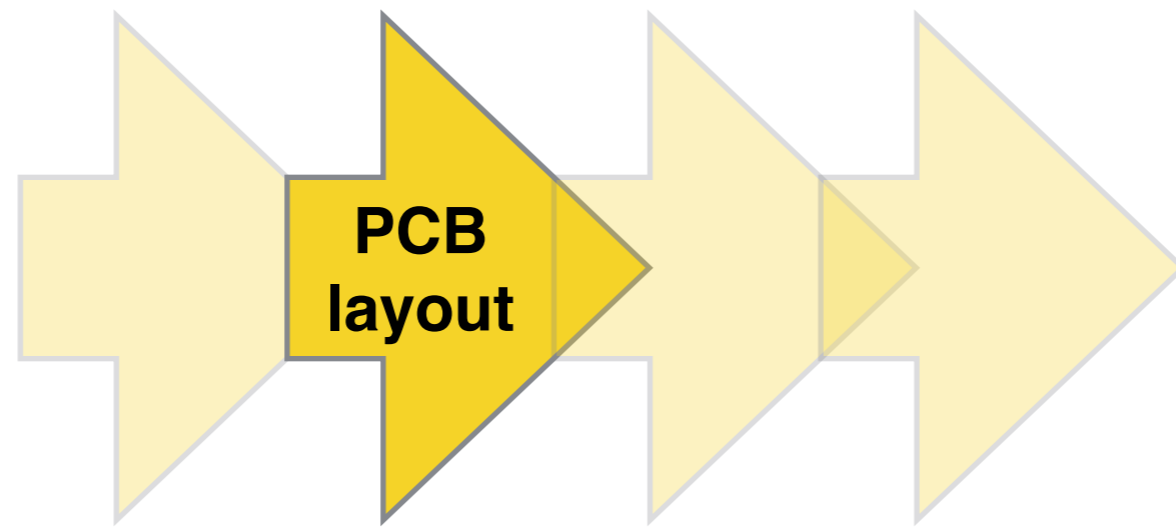
- 91s (non-adaptive)
0.5s (adaptive)
- $O(\text{mesh cells}^3)$
- + more flexible

Modified



- 0.7 ms
- + $O(\text{straight segments})$
- less flexible





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