AC Transmission model

\[ \frac{v_s}{\sqrt{m \frac{v_2}{J/\beta^2}}} \]
Sectionalized line

\[ 0 \quad \frac{1}{4} \quad \frac{1}{2} \quad \frac{3}{4} \quad \frac{3}{2} \quad R_{\frac{1}{2}} \quad x_{\frac{1}{2}} \quad m \quad 0 \]
Surge Impedence Loading = \[ Z \]

An AC Line will produce

\[ \text{MVAR} = (\frac{B}{2})v_i^2 + (\frac{B}{2})v_2^2 - I^2x \]
Assume \( V_1 = V_2 = 1 \)

MVAR's Produced = 0

\[ 0 = \beta_2 + \alpha_2 - I^2x \]

\[ I^2x = B \]

\[ I = \sqrt{B/x} \]