

Power-swing characteristics in lower inertia grid

B5 Protection and automation

PS1

Are there any changes to power swing characteristics in lower inertia grid, which would prompt changes to power swing blocking or out of step tripping protection settings or schemes?

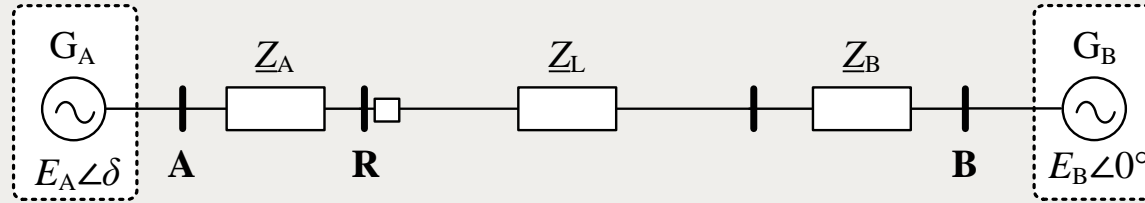
(QUESTION 1.05)

Urban Rudež, Slovenia

Impedance seen by the relay

TOTAL IMPEDANCE BETWEEN MACHINES

$$\underline{Z}_T = \underline{Z}_A + \underline{Z}_L + \underline{Z}_B$$

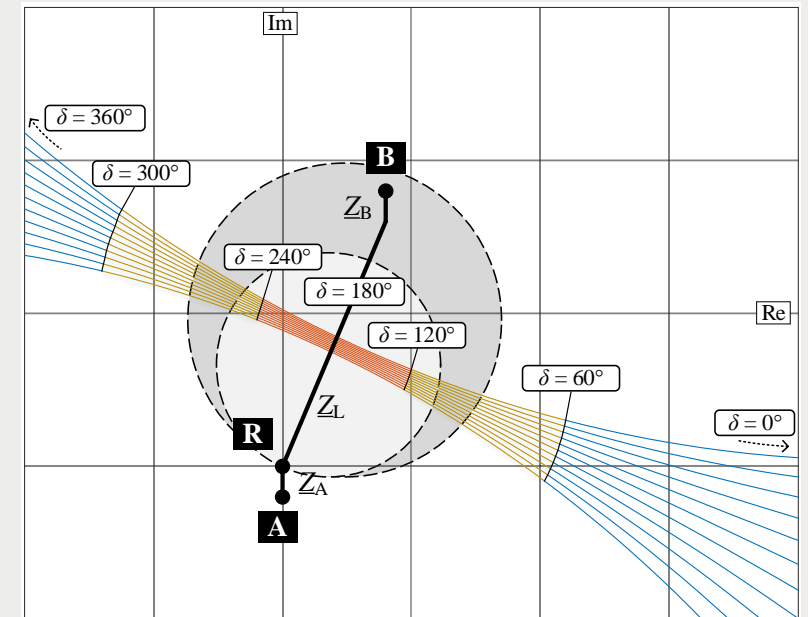
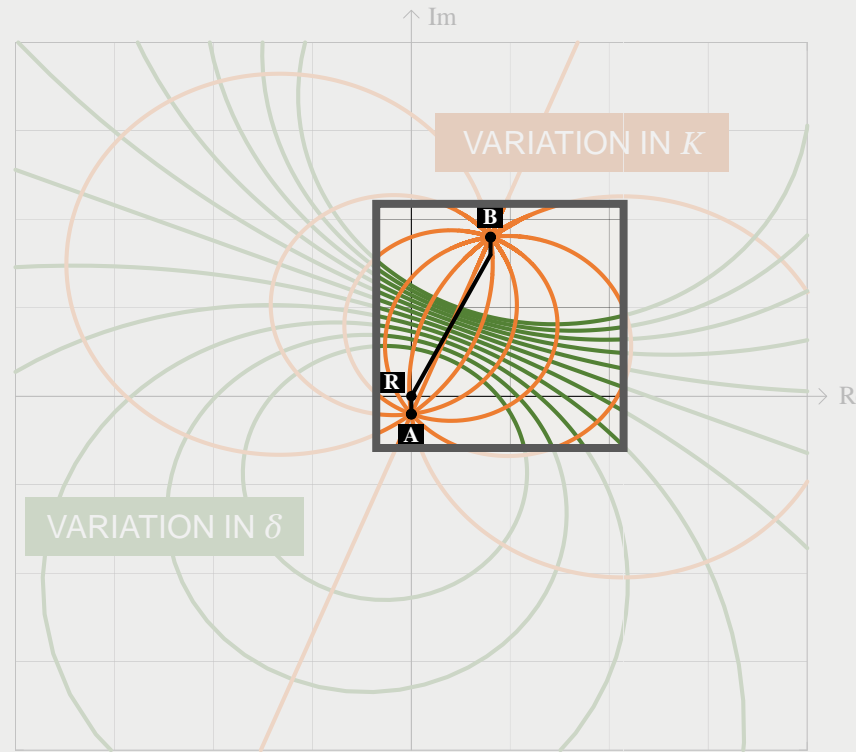


VOLTAGE AMPLITUDE RATION

$$\frac{|\underline{E}_A|}{|\underline{E}_B|} = K$$

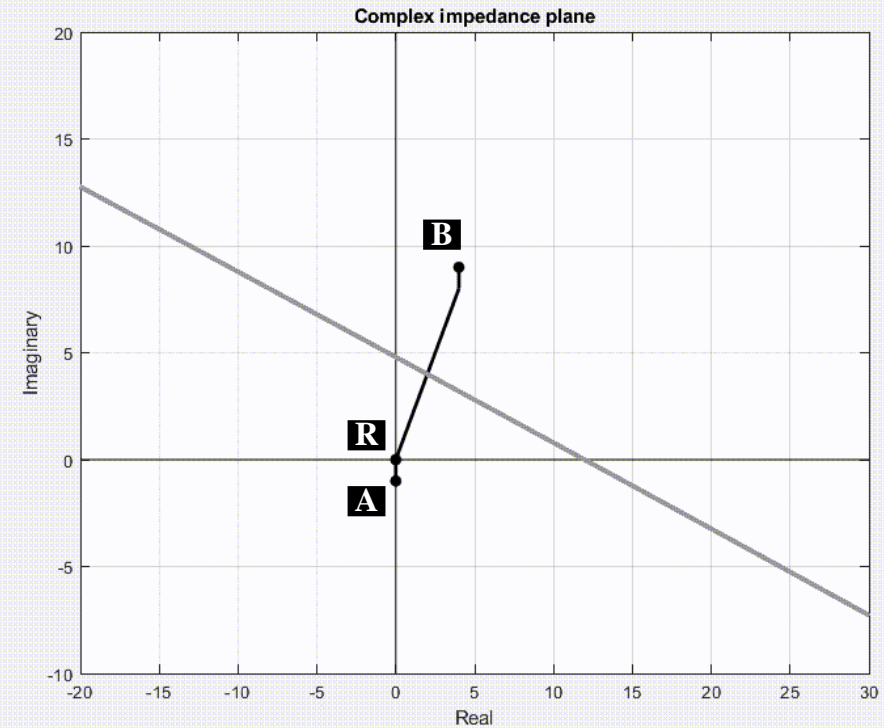
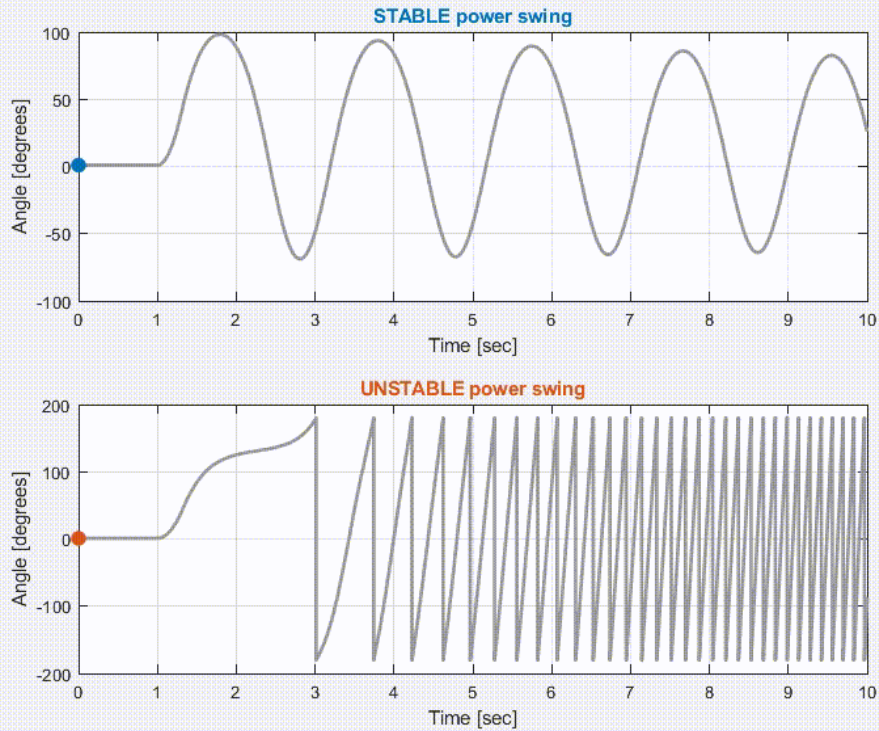
IMPEDANCE „SEEN BY THE RELAY“ AS A FUNCTION OF TWO VARIABLES

$$\underline{Z}_R(K, \delta) = \frac{K \cdot e^{j\delta}}{K \cdot e^{j\delta} - 1} \cdot \underline{Z}_T - \underline{Z}_A$$



Group Discussion Meeting

Impact of power swings to impedance seen by the relay



Group Discussion Meeting

Power-swing characteristics in lower inertia grid

- A NEED FOR CHANGING OUTER AND INNER-ZONES PLACEMENT
- CORRESPONDING TIMERS MAY BE KEPT UNCHANGED

