

EE 3113

INTRODUCTION INTO RF

CIRCUIT DESIGN

Lecture Notes for A-term 1999

LECTURE 10

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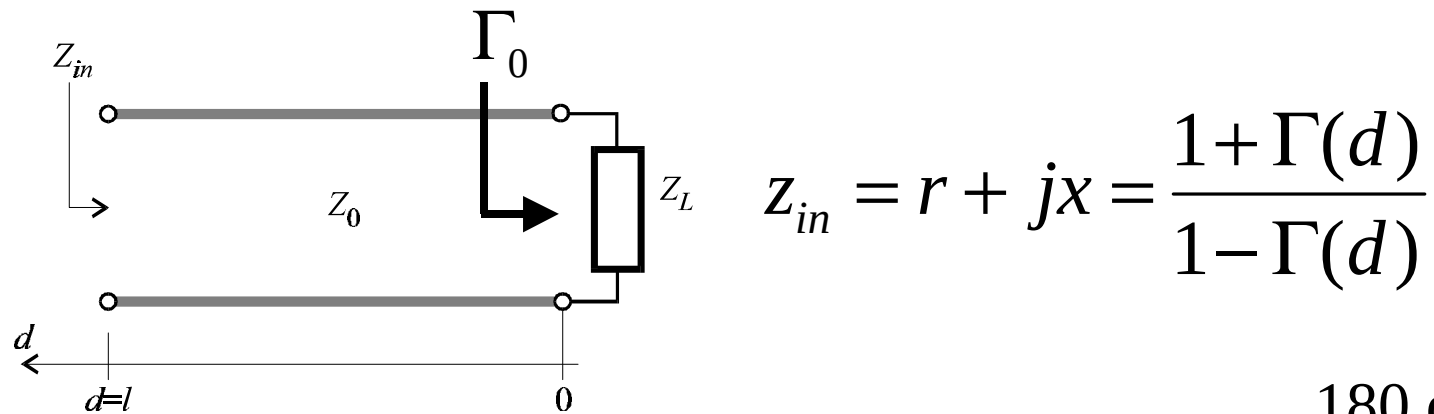
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Admittance Transformation (Smith Chart)

- impedance representation in Smith Chart

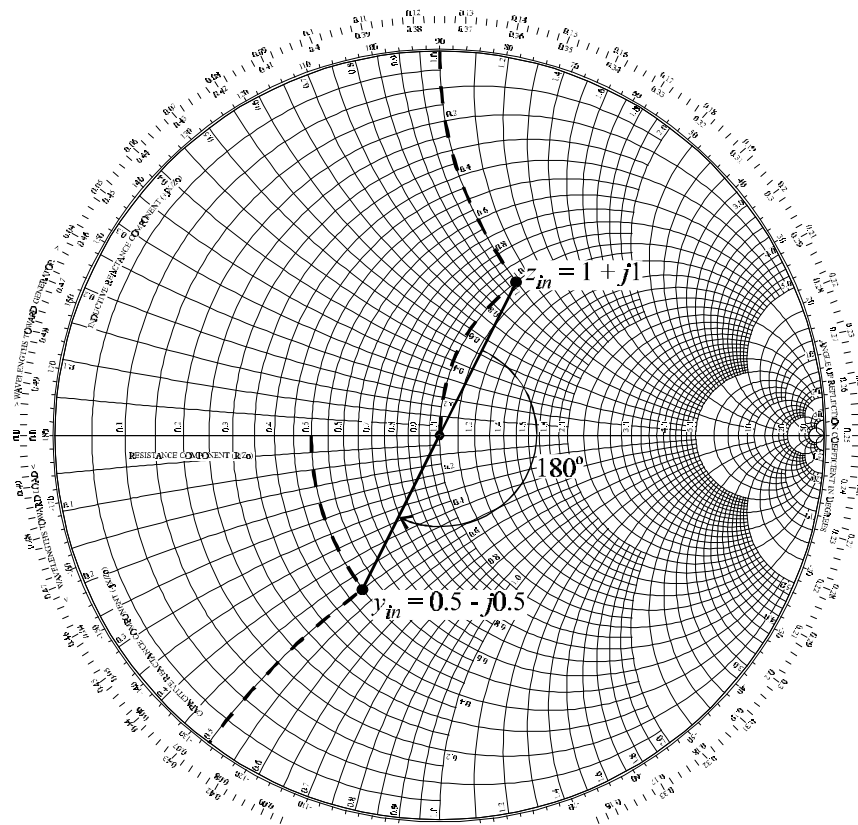


- admittance representation in Smith Chart

$$y_{in} = \frac{Y_{in}}{Y_0} = \frac{1}{Z_{in}} = \frac{1 - \Gamma(d)}{1 + \Gamma(d)} \equiv \frac{1 + e^{-jp} \Gamma(d)}{1 - e^{-jp} \Gamma(d)}$$

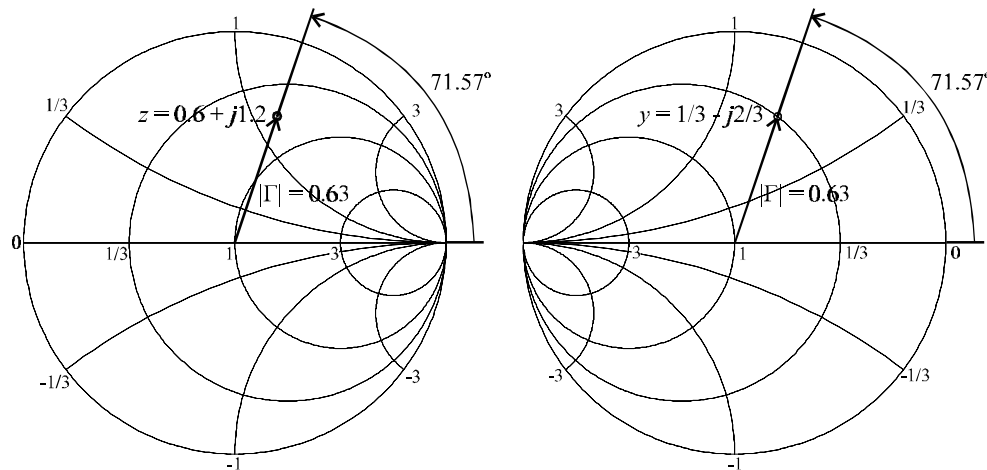
180 degree
phase shift

Transformation $z_{in} = 1 + j1 \rightarrow y_{in} = \frac{1}{2} - j\frac{1}{2}$

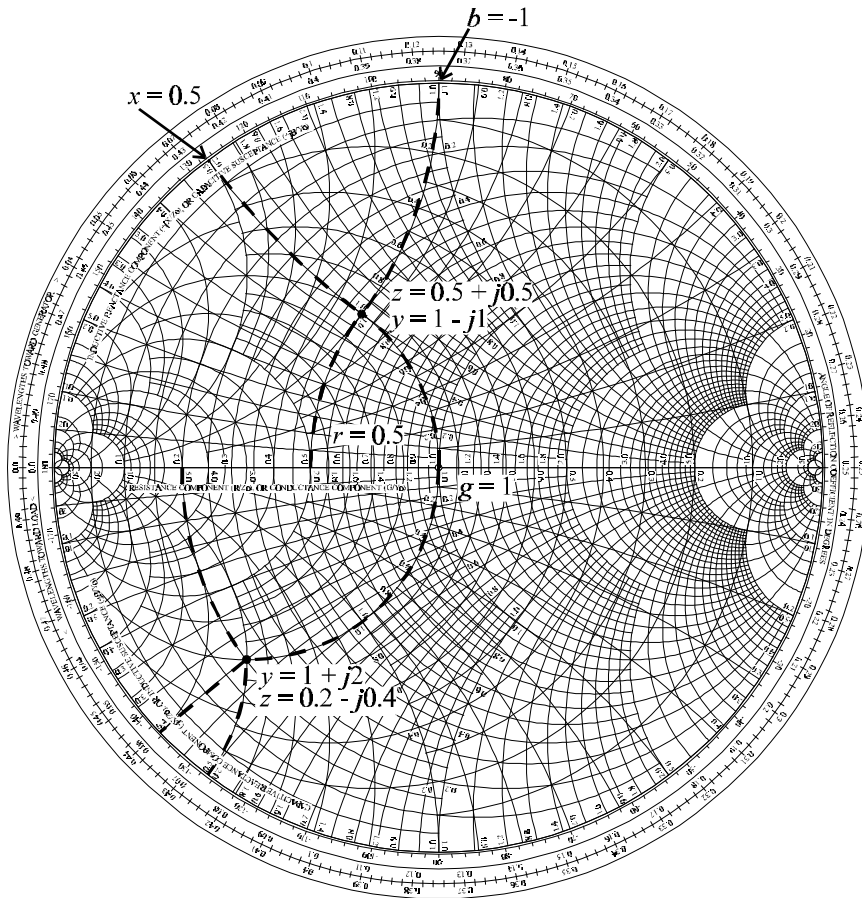


Alternative: re-interpretation

Instead of rotating the reflection coefficient about 180 degree, we keep the location fixed and rotate the entire Smith Chart by 180 degree.



Re-interpretation leads to ZY-Smith Chart



The Smith Chart in its **original form** is kept for **impedance** display,

but a **second Smith Chart** is rotated by 180 degree for **admittance** display.