

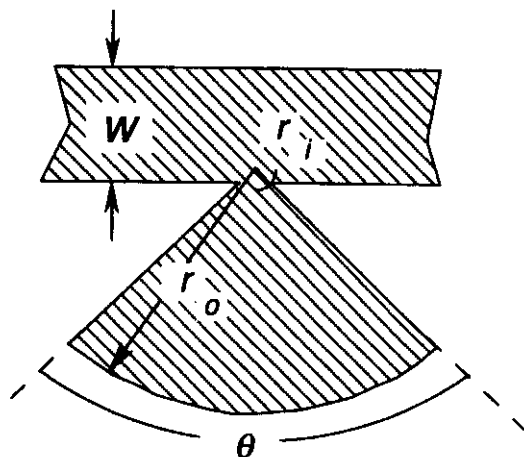
5.5.7 *Microstrip Line Radial Stub*

Figure 5.5.7.1: Radial Stub

This element presents a low impedance to ground at a precisely located point. It is useful because it is physically shorter than the equivalent transmission line. The two basic types are series and shunt as depicted below:

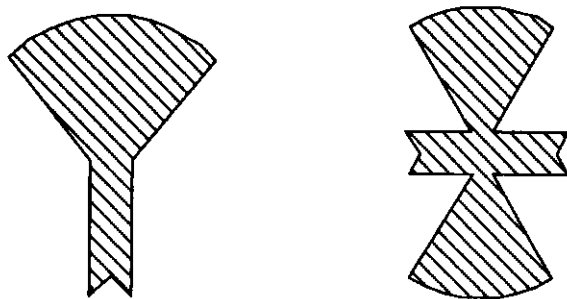


Figure 5.5.7.2: Radial Stubs: (a) Series (b) Shunt

Multiple stubs can be present on either the series or shunt configuration. In the shunt configuration, the added symmetry of multiple stubs may improve bandwidth.

The relations of March [8] include the effect of losses:

$$Z_{in} = -j \frac{120 \pi h}{r_i \theta \sqrt{\epsilon_{eff}}} \text{Ct}(\beta r_i, \beta r_o) \quad (\Omega) \quad (5.5.7.1)$$