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Resonance Splitting in RF Cylindrical Cavities with Circular Apertures LUIS MARTINEZ, University of California, Merced — Coupling of two RF cylindrical cavities is achieved with the use of a single, thin, circular aperture (iris) located between the two cavities in the transverse plane. A tunable splitting, in which the single resonance splits into a closely spaced doublet for the TE011 mode is experimentally observed. It is found that the frequency spacing of the doublet is related to the circular aperture size. A model based on the analogy of a multi-mirror optical Fabry-Perot cavity, in which the frequency spacing of the doublet is related to the reflection coefficient, is found to be in excellent agreement with the experimental results. Calculation of the reflection coefficient for the circular aperture is performed using the closed form solutions derived from scattering amplitude and circular aperture theory.

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