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HOM Detuning and Damping of C-Band Distributed Coupling Structure

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Standing wave structures typically operate at the pi-mode. Evidently the cell length of such a structure is half a wavelength. However, maximal shunt impedance per unit length was found to be at a cell length of $3/8$ wavelength, which corresponds to phase advance per cell of 135 degrees. A distributed coupling structure at 5.712 GHz was developed based on the high efficient 135/degree phase advance design. For practical linear collider designs, the structure must include HOM detuning and damping to mitigate long-range wakefields effects. Due to the high cutoff frequency of the cell iris, effective detuning and damping of the dipole HOMs at frequencies up to 40 GHz is required. In this presentation we will present HOM detuning and damping schemes to meet the long-range wakefield requirements of a linear collider design.

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