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**Design of a Dielectric Loaded Normal Conducting Standing Wave Structure for Higher Shunt Impedance.** JANARDAN UPADHYAY, LAMPF, JOHN LEWELLEN, Los Alamos National Lab — Radiofrequency cavities operated in the TM010 mode are the building blocks of most normal-conducting linear accelerators. A dielectric loaded TM020 cavity is proposed which would require approximately half the RF power as a TM010-mode cavity to generate the same accelerating fields, while keeping other accelerator properties the same. Since RF power represents both large capital and operating expenses for accelerator facilities, such an efficiency improvement represents a significant benefit. It is also of potential use for small accelerators where both power availability and waste heat dissipation are concerns, such as small industrial or space-based applications. The analytical work and computational simulation done on CST microwave studio of this type of RF structure are presented.

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