

**STUDY OF IH LINEAR ACCELERATOR WITH HIGHER ORDER MODE**

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*Abstract*

An Interdigital-H (IH) linac has been used for ion acceleration in low beta range. It can realize a resonant cavity of a convenient size at low frequencies and higher shunt impedance at low energy range. These characteristics are advantageous especially for heavy ion acceleration. Since the shunt impedance of the IH linac reduces according to the increasing of beam energy, the linacs operated by the TM<sub>010</sub> mode such as an Alvarez type and a coupling cavity type are adopted for medium and high energy range. However, we propose the new IH linac using the TE<sub>11n</sub> mode, the higher order mode IH (HOM-IH) linac. By using the higher order mode, the resonance frequency is higher than that of the IH linac. This property is suitable for middle and high beta linacs, and a proton linac as well. The design of the cavity structure and the possibility are presented.

**CONTRIBUTION NOT  
RECEIVED**