

AbstractID: 11986 Title: Pushing the Limits of Microwave Linear Accelerators

We will review recent advances for ultra-high gradient-linac. We will show how the research on the basic phenomena of microwave breakdown in ultra-high vacuum structure, led to novel geometrical designs that allow electron linac to achieve gradients in excess of 140 MV/m. Also, with the usage of copper alloys, one would hope to push this gradient to 180 MV/m. these advances can be applied to proton linacs. We will present suggested designs for future proton linacs, which would push the gradient to more than 70 MV/m. These will operate at high frequency in the X/Ku band. With this technology one hopes to design compact proton therapy machines at energies of ~ 250 MeV, with fine control of energy. The compactness of the linac might allow the whole system to be installed on a single gantry.