

RF System Concepts for a Muon Cooling Experiment*, A. MORETTI, FNAL; J.N. CORLETT, D. LI, W.C. TURNER, LBNL; H.G. KIRK, R.B. PALMER, Y. ZHAO, BNL - This paper discusses rf concepts for re-acceleration of muons in an ionization cooling experiment. Nominal beam momentum is 160 MeV/c ($\beta = 0.84$). The muon cooling channel consists of 1.2 m lengths of rf accelerating structure alternating with 0.5 m LH2 absorbers immersed in a superconducting solenoid magnetic transport system. In order to achieve a high ratio of accelerating field to surface field the 805 MHz rf cavities have thin Be windows and resemble pill box cavities. The cavities are cooled to 77 K to reduce losses. Traveling wave $2\pi/3$ and standing wave π mode coupled cavity structures fed from one end have been analyzed. In addition standing wave interleaved structures have been examined because of the improved transit time factor. In the simplest version there are two interleaved chains of coupled cavities with $\pi/2$ phase advance per cavity. Within a single chain successive cavities have π phase advance. Three and four interleaved chains with $\pi/3$ and $\pi/4$ phase advance per cavity have also been examined. Cavity Q, shunt impedance and dispersion obtained from MAFIA simulations will be presented for all of these cases. Temperature increase of the Be windows by rf has been estimated. An experimental program is being started and will be described.

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