

Design Progress of MuST: A High-Intensity Muon Source Based on a Superconducting Linac

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A high-intensity muon source named MuST has been proposed for several years at IMPCAS in China. Utilizing the 5-mA proton beam of CiADS linac on targets, multiple muon beamlines can be fed, and the intensity of the DC muon beam is expected to be record-breaking. Here, the conceptual layout of MuST, including the tandem targets, the muon beamlines, and the terminals, is presented. The plan and the conceptual design progress are reported. The study of the liquid jet target, which is more efficient in producing surface muons than graphite and has the potential to withstand a 3-MW proton beam, is presented. The design logic of the muon beamlines is introduced, and the main parameters of the muon beams are given.

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