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Main Injector Particle Production Veto Hodoscope Upgrade

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— The Main Injector Particle Production (MIPP) experiment at Fermi National Accelerator Laboratory (FNAL) has multiple goals which include: providing a starting point for the study of non-perturbative QCD and its associated baryon resonances, gaining a better understanding of the propagation of particles in nuclei, and to improve hadronic shower models in collider simulation programs such as Geant. Having completed its initial run, the MIPP experiment is again in the proposal stage to upgrade the detector in order to improve the data acquisition rate and to extend the measurements to lower momenta. During the original run, especially at low momentum, beam halo and spray particles hitting the experiment in coincidence with events of interest caused problems. The existing veto scintillator, a .3 x .3 m panel with a hole in the center for the beam to pass through, was found to be too small in the initial run and thus is rendered even less effective in the upgraded experiment due to the increase of beam intensity and background. Because of this problem a 1.8 x 1.2 m veto hodoscope has been constructed from eight 1.8 x .15 m Eljen EJ-200 plastic scintillators, with a notch in the two middle pieces to form a hole to allow the beam to pass through, and 16 photomultiplier tubes to replace the existing panel. The research, design, testing, and assembly of this wall will be presented.

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