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Investigating noble gas mixtures for use in TPCs ANNA JUNGBLUTH, MIT — MITPC is a gas-based time projection chamber used for detecting fast, MeV-scale neutrons. MITPC relies on a CCD camera and the TPC (time projection chamber) technique to visualize and reconstruct tracks of neutron-induced nuclear recoils within a chosen gas. The standard version of the detector uses a mixture of 600 torr gas composed of 87.5 % helium-4 and and 12.5 % tetrafluoromethane (CF4) for precise measurements of the energy and direction of neutron-induced nuclear recoils. Previous studies demonstrated advantages of using neon as a replacement gas for helium-4. This talk will present a discussion of studies performed with helium and neon, as well as argon and krypton as primary neutron targets in the gas mixture with CF4.

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