

Abstract Submitted
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Search for Dark Photons with the SeaQuest Spectrometer¹

MICHELLE MESQUITA DE MEDEIROS, Argonne National Laboratory — The SeaQuest E906 experiment is a fixed target Drell-Yan experiment which is aimed at studying the anti-quark distributions in the nucleon and nuclei. 120 GeV protons from the Main Injector at Fermilab could also be used to search for massive dark gauge bosons or dark photons in SeaQuest. The interactions of the proton beam with the 5m long iron beam dump can produce dark photons through processes such as proton bremsstrahlung and eta decay. These dark photons can decay into dimuons, and for dark photons with weak coupling to the EM sector, the decay vertex is significantly displaced from the dark photon production point, allowing for a very low background search. By detecting the dimuons with the SeaQuest spectrometer and analyzing its invariant mass distribution, one can search for signatures of these exotic processes. Exclusion limit projections for SeaQuest and preliminary results of the dark photon search will be presented.

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