

Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Design and Operation of a Windowless Gas Target Internal to a Solenoidal Magnet for Use with a Megawatt Electron Beam¹ SANGBAEK LEE, Massachusetts Institute of Technology, DARKLIGHT COLLABORATION — A windowless gas target has been designed, assembled, and tested, which is driven by the DarkLight experiment to search for a new force mediator beyond the standard model. The target is an essential component of the experiment that runs with the 100 MeV scale megawatt electron beam at an Energy Recovery Linac (ERL). After the target system was operated at a commissioning run in 2016 at Low Energy Recirculator Facility (LERF) at Jefferson Lab, it was further improved and calibrated at MIT Bates in 2017. The windowless gas target was verified to maintain sufficiently high density and desired pressure gradient as required for experiments in an ERL environment including the DarkLight.

¹This research is supported by the NSF MRI Program (Award No. 1437402), the U.S. Department of Energy Office of Nuclear Physics (Grant No. DE-FG02-94ER40818 and DE-AC05-06OR23177), and the U.S. Department of Energy Office of High Energy Physics (Grant No. DE-SC0011970).

Sangbaek Lee
Massachusetts Institute of Technology

Date submitted: 28 Jun 2019

Electronic form version 1.4