

Abstract Submitted
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Internal gas target system for the DarkLight experiment¹ IVICA FRISCIC, MIT — The DarkLight experiment at Jefferson National Laboratory (JLab) will perform a search for a dark photon in the mass range from 10 to 100 MeV/c². The experimental design requires very high luminosity, but at the same time must keep the background rate as low as possible. Therefore, the experiment will use the 100 MeV electron beam from JLab's Low Energy Recirculator Facility (LERF) and a windowless gas target. In the summer of 2016 we deployed Phase 1A of this experiment, including a thin-walled, windowless target, using narrow apertures to restrict the flow of gas and aggressive pumping systems to reduce the pressure outside of the target region. Here we present the current design of the DarkLight internal gas target system, its performance during the 2016 summer beam tests, and future prospects.

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