

Abstract Submitted
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Optical Tests in support of the MiniCLEAN Dark Matter Search¹

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MiniCLEAN experiment will search for WIMP dark matter with a WIMP-nucleon
cross section sensitivity of $2 \times 10^{-45} \text{cm}^2$. The detector has a fiducial volume of over
150 kg of liquid argon with the capability to be changed to liquid neon for back-
ground studies and R&D for a future detector. The MiniCLEAN experiment will be
located at SNOLAB in Sudbury, Canada in early 2010. MiniCLEAN will use posi-
tion reconstruction and the time structure of scintillation light pulses to distinguish
signals from backgrounds on an event-by-event basis. The DEAP/CLEAN collabo-
ration has undertaken a suite of R&D projects to characterize the optical train of
the experiment: from creation of Extreme Ultraviolet (EUV) scintillation light in
the liquid cryogen, to the down-scatter of of EUV to visible light by wavelength
shifting films, and the collection visible light by photomultiplier tubes operating
at low-temperatures. We present these efforts in the context of previous measure-
ments as well as outline our current experimental program and its future direction
in support of MiniCLEAN.

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