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The DarkSide-50 liquid argon dark matter search TESSA JOHNSON, University of California at Davis, DARKSIDE-50 COLLABORATION — The DarkSide-50 experiment uses three nested detectors to directly search for WIMP dark matter, with the innermost detector a time projection chamber filled with a target of liquid argon (LAr). The unique difference in pulse shape between electron recoils and nuclear recoils in LAr allows for exceptional discrimination of beta and gamma backgrounds. Event discrimination due to pulse shape coupled with the neutron discrimination power of the outer detectors is used to create a background-free environment for the DarkSide-50 WIMP search. Atmospheric argon, including the radioactive ^{39}Ar isotope, was first used to search for WIMPs in a 50-day campaign, and later a search with 70.9 days of livetime was performed with argon extracted from underground wells, reducing the ^{39}Ar isotope by a factor of 1.4×10^3. The status of the experiment will be discussed.

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