Abstract Submitted
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LUX Cryogenics and Circulation ADAM BRADLEY, Case Western Reserve University, LUX COLLABORATION — LUX is a new dark matter direct detection experiment being carried out at the Sanford Underground Research Facility, at the renewed Homestake mine in Lead, SD. The detector's large size supports effective internal shielding from natural radioactivity of the surrounding materials and environment. The LUX detector consists of a cylindrical vessel containing 350 kg of liquid xenon (LXe) cooled down and maintained at 175-K operating temperature using a novel cryogenic system. We report the efficiency of our thermosyphon-based cooling system, as well as the efficiency of a unique internal heat exchanger with standard gas phase purification using a heated getter, which allows for very high flow purification without requiring large cooling power. Such systems are required for multi-ton scale up.

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