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The XENON100 Dark Matter Experiment: Initial Performance and Projected Sensitivity[1] ELENA APRILE, Columbia University, XENON COLLABORATION — The XENON Dark Matter Project aims at the direct detection of WIMPs (Weakly Interacting Massive Particles) with dual phase (liquid/gas) xenon time projection chambers (LXeTPCs). Following the successful performance of the XENON10 detector, which has shown in 2007 the best sensitivity to spin-independent coupling of WIMPs to matter, we have designed and completed the construction of a new TPC with an active LXe shield, containing a total of 150 kg of xenon. The detector, mounted in the same passive shield used for XENON10 at the Gran Sasso Underground Laboratory, is currently undergoing gamma calibration. Based on a similar design as XENON10, XENON100 features an increase in fiducial target mass of a factor of 10, with an overall background rate about 100 times lower. We report on the status of this development and discuss the projected sensitivity reach for dark matter detection.

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