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Proportional scintillation light signal in the XENON100 - optimization and characterization EMILIJA PANTIC, postdoctoral scholar, THE XENON COLLABORATION — The ionization detection channel in the XENON100 detector is measured via secondary scintillation light (S2 signal) that is proportional to the amount of charge produced by a particle interaction. The S2 signal is determined both by the reduced field (field/pressure), which induces electroluminescence by accelerating extracted electrons from the liquid, and the electron drift length within the gas gap. In this talk we report on the charge response of the XENON100 detector. The S2 signal optimization includes leveling of the detector to achieve uniformity of the signal and tuning of the liquid level to obtain an optimal S2 signal response. The S2 signal characterization is performed using different calibration sources to measure its yield, resolution, position and time dependence. Detection of single electrons with the XENON100 detector enables excellent sensitivity to detection of low mass WIMPs.

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