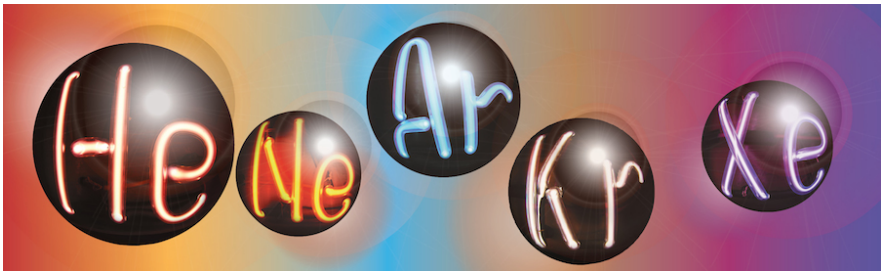

Contribution ID: **37** Type: **Presentation**

Krypton-85 Removal for LZ Using Gas Charcoal Chromatography

Friday, 22 September 2017 12:15 (15 minutes)

Most radioactive backgrounds in liquid xenon TPCs arise from external sources and are mitigated by xenon' s self-shielding properties combined with event position reconstruction and vetoes. Background sources that instead arise from substances dissolved throughout the active region, such as krypton-85, present a distinct challenge. This talk will describe our novel system for separating krypton from xenon using gas charcoal chromatography. Commercial research grade xenon contains on the order of 10,000 ppt of krypton and we require a concentration of < 0.300 ppt krypton for LZ. We have demonstrated a krypton concentration of <0.06 ppt with our R&D system and expect to achieve our ultimate goal of <0.015 with the production system, which will begin construction next year.

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Session Classification: Friday Morning 2

Track Classification: Detector techniques (HV, cryogenics, purification, calibration, etc.)