Canadian Association of Physicists   Association canadienne des physiciens et physiciennes

Contribution ID: **1741**   Type: **CLOSED - Oral (Non-Student) / orale (non-étudiant)**

Implementation of "Salting" as Blinding Scheme for CDMSlite

Thursday, 1 June 2017 14:30 (15 minutes)

Motivated by a set of compelling cosmological and astrophysical observations giving evidence for the existence of dark matter, the Super Cryogenic Dark Matter Search (SuperCDMS) experiment aims to keep pushing the sensitivity for interactions of Weakly Interacting Massive Particles (WIMPs), one of the most plausible dark matter candidates, and directly detect them with an array of cryogenic detectors.

Due to the low number of expected signal events and the presence of background, the analyzers may be unconsciously biased to fine-tuning for or against a signal-like feature while performing the analysis. To remove such human bias, the region of interest should be blinded until all relevant analysis decisions are taken. The blinding method of restricting access to data within the region of interest, traditionally used in CDMS and SuperCDMS, is well suited for the typical analyses where little or no background is expected in the signal region. However, it does not appear to be the best option for the background limited analysis of the CDMS Low Ionization Threshold Experiment (CDMSlite). Thus, for CDMSlite Run 3, a new blinding approach is adopted where artificial events ("salt") are injected into the data, only to be removed during the un-blinding step of the analysis.

This talk will mainly focus on the implementation of salting in CDMSlite, while briefly discuss its potential adaptation in the future for SuperCDMS SNOLAB.

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Session Classification: R3-4 Testing Fundamental Symmetries III (DNP/PPD/DTP) | Tests de symétries fondamentales III (DPN/PPD/DPT)

Track Classification: Particle Physics / Physique des particules (PPD)