

# Prospects for dark matter discovery with inelastic transitions of xenon

*Tuesday, 27 October 2015 14:51 (17 minutes)*

Dark matter can excite the xenon isotopes  $^{129}\text{Xe}$  and  $^{131}\text{Xe}$  through a spin dependent interaction. The excited isotopes quickly decay giving a 40 keV and 80 keV photon, respectively. This signal is very distinct from the usual signal from elastically scattering dark matter and, if discovered, would provide clear evidence against the usual spin independent interaction. I discuss the prospects of discovering this inelastic signal with up-coming tonne-scale two-phase xenon direct detection experiments.

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**Session Classification:** Dark Matter

**Track Classification:** Dark matter searches (direct and indirect)