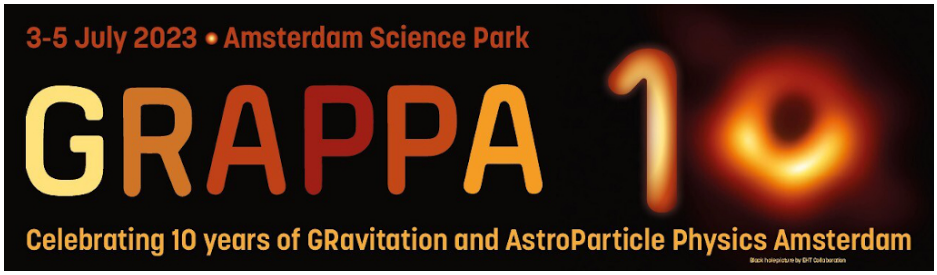

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Cleaning a Dark Matter Detector

Wednesday, 5 July 2023 15:00 (15 minutes)

In dark matter detection experiments, Xenon tanks are being used to find traces of dark matter particles that are hypothesised to crisscross the universe. For such detection to succeed, the Xenon in the tanks has to be clean. But what is clean? In this context, it means that no background mimics the signs of dark matter particles, and when there are no electronegativities that might erase such signs. In practice, such cleanliness is difficult to achieve – as soaps may be radioactive, steel may spread electronegativity, and humans are altogether dangerously filthy. In this talk, I discuss the idiosyncratic cleaning practices of the XENONnT experiment that aims find WIMP dark matter. What does ensuring a detector's cleanliness entail? And how does one know whether a detector is, in fact, adequately clean?

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