

# Commissioning of TREX-DM, a low background Micromegas-based TPC for low mass WIMP detection

*Wednesday 24 June 2015 17:05 (25 minutes)*

Dark Matter experiments are recently focusing their detection techniques in low-mass WIMPs, which requires the use of light elements and low energy threshold. In this context, we describe the TREX-DM experiment, a low background Micromegas-based TPC for low-mass WIMP detection. Its main goal is the operation of an active detection mass  $\sim 0.300$  kg, with an energy threshold below 0.4 keVee and fully built with previously selected radiopure materials. This work focus on the commissioning of the actual setup situated in a laboratory on surface. We also describe the updates needed for a possible physics run at the Canfranc Underground Laboratory in 2016. A preliminary background model of TREX-DM is also presented, based on Geant4 simulations and two discrimination methods: a conservative muon/electron and one based on a  $^{252}\text{Cf}$  source. Based on this background model, TREX-DM could be competitive in the search for low mass WIMPs. In particular it could be sensitive, e.g., to the low mass WIMP interpretation of the DAMA/LIBRA and other hints in a conservative scenario.

**Primary author:** Dr IGUAZ GUTIERREZ, Francisco Jose (University of Zaragoza)

**Co-authors:** Dr GARCIA IRASTORZA, Igor (University of Zaragoza); Mr GRACIA GARZA, Javier (University of Zaragoza)

**Presenter:** Dr IGUAZ GUTIERREZ, Francisco Jose (University of Zaragoza)