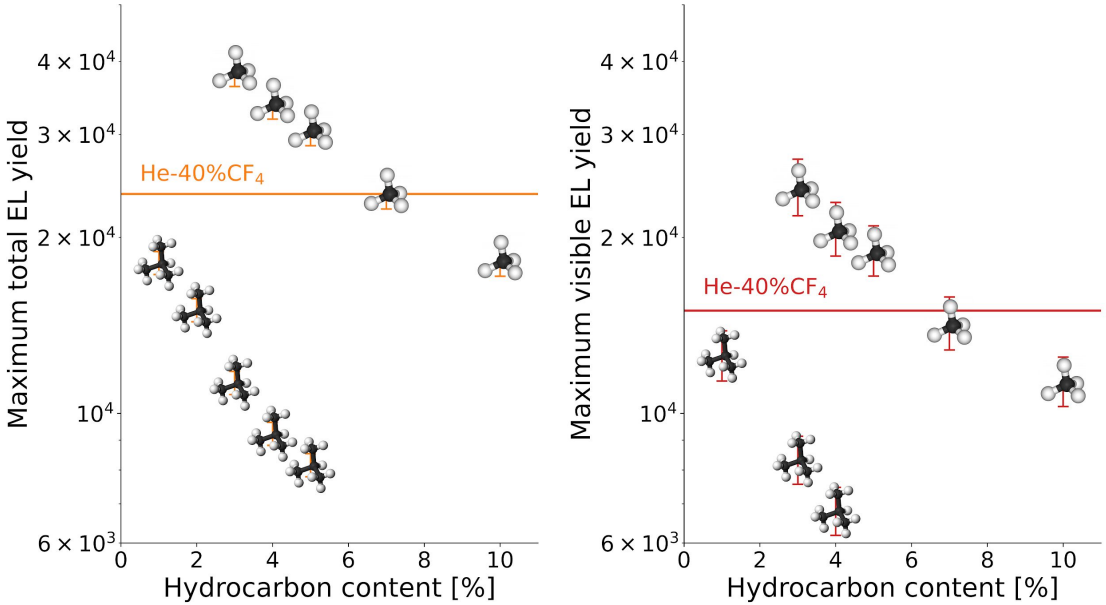
Effects of hydrocarbon admixtures to the electroluminescence yield of He-CF_4

R.J.C. Roque, R.D.P. Mano, F.D. Amaro, C.M.B. Monteiro, J.M.F. dos Santos

LIBPhys-UC Department of Physics, University of Coimbra, Portugal

He-CF_4 is a very attractive gas mixture for Optical Readout Detectors in Dark Matter Search, such as the CYGNO collaboration. **Small percentages of hydrocarbon would further improve their sensitivity to low WIMP mass, but their effect on the optical readout is unknown.**



We evaluated the **total** and **visible** (>300 nm) electroluminescence (EL) yield of methane and isobutane admixtures to He-40%CF_4 to find the best ternary mixture.

Turns out no compromise is needed!

Using up to 7% methane to increase the WIMP sensitivity of Dark Matter Detectors filled with He-40%CF_4 will also improve their optical readout.