Dual Phase Xe TPC

-S1 = Xe excimers + recombined electrons, S2 = ionization that escaped

-Z reconstruction (timing between S1 and S2), XY reconstruction (S2 top array LRF)

-Reflectivity and Teflon (178 nm wave length – Vacuum ultra violet)

-ER and NR discrimination (patrick’s ch 6)

LUX

-Structure

-Outer cryostat, vacuum system, and thermal insulation + thermometry

-Water Tank and source tubes

-Inner cryostat, hanging copper structures (gamma shield, PMT holders, filler chiller shield)

-PTFE on sides for reflectivity at 178 nm, supported by polyethylene panels, with field cage inbetween.

-Five wire grids for fields

-Liquid level and weir

-break out cart, cabling, and purge flows

-Thermosyphons

-LN system

-Instruments – thermometry, pressure, level sensors, and slow control readout

-Signal readout

-PMTs

-DAQ, triggers, and PODs

-Xenon

-Total mass and fiducial mass

-Circulation and purification, heat exchangers

-electron lifetime (discussed later)

-Sampling System

-Dekryptonation (11 year half life, CWRU work, etc).

-sampling campaign