DarkSide-50 (E1000) report to All Experimenters Meeting

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All Experimenters Meeting

Nov 16 2015

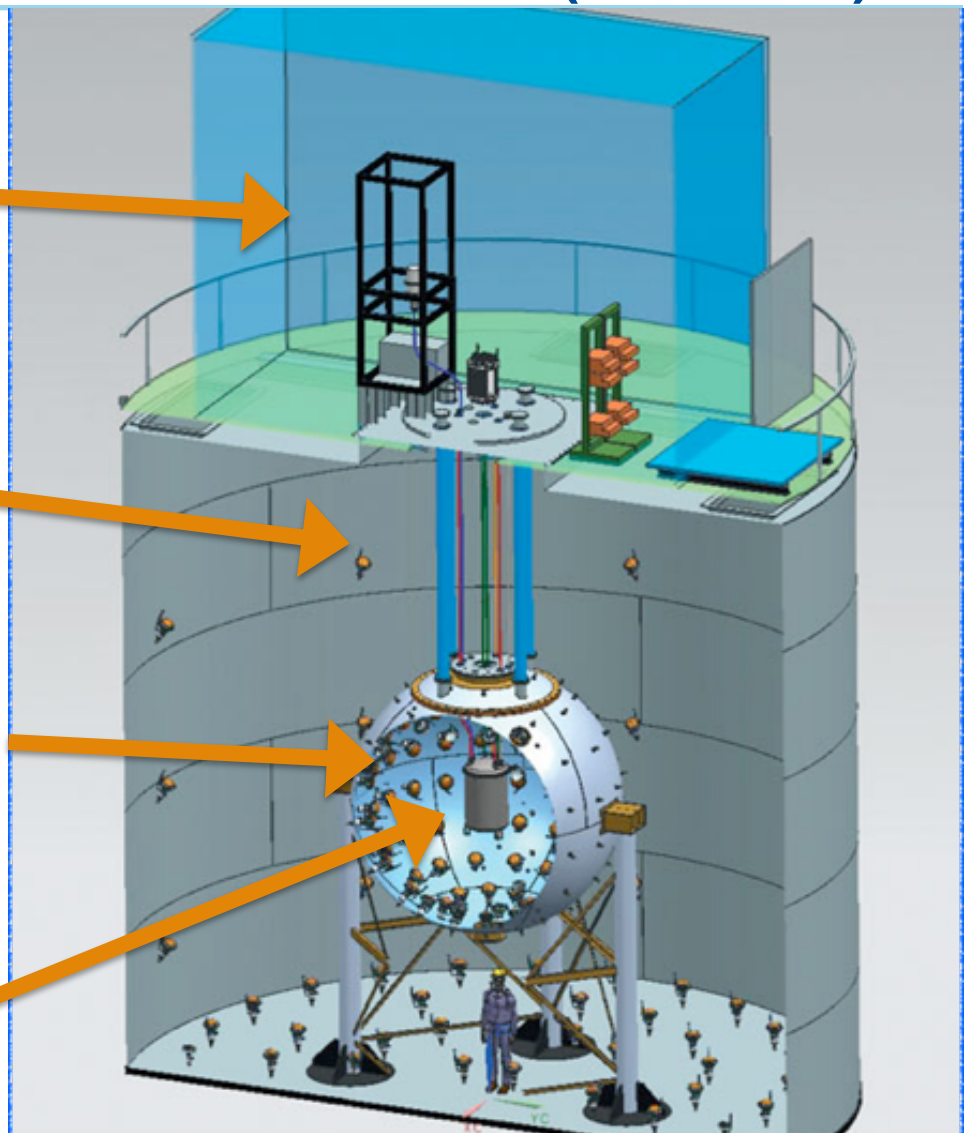
DarkSide-50 at LNGS Apparatus Schematic (reminder)

Radon Free Clean Room
(< 5 mBq/m^3)

Water Cerenkov
(Muon Veto)
11m ϕ 10 m high (1 kt) 80 PMTs

Boron-loaded Liquid Scintillator
(Neutron and γ Veto)
4 m sphere (30 tons) 110 PMTs

LAr 2-phase TPC (50kg active, 153 kg total) 38 PMTs



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Fermilab Technical Responsibilities in DarkSide-50

• DS-50 Argon Cryogenics system	C. Kendziora (PPD-MED)
• Underground Argon Purification	(H.Back**) (PAB staff)
• Trigger for TPC & Global Trigger	B. Baldin (PPD-EED)
• Data Acquisition (artdaq)	K. Biery (SCD)
• Offline framework (art)	art group (SCD)
• Data Transfer from Italy	CCD
• SAM, Fermigrid, OSG, Fife	Ken Herner (SCD)
• Data Reconstruction	OSG

** Now at PNNL

Insertion of Underground Argon (UAr)

- Installation and commissioning of final gettering system
- Connection between gettering system and DarkSide system
- Completion of Argon Recovery System – Cryocooler water lines, high-pressure compressor, gas-lines

  all argon and nitrogen piping to Helium leak-check standards
- Recovery system test (with atmospheric argon)
- Getter system test

=> Empty DarkSide-50 mid-March

=> Fill with UAr 1 week later

=> Report to LNGS Scientific Committee 4-28-15

All done ..

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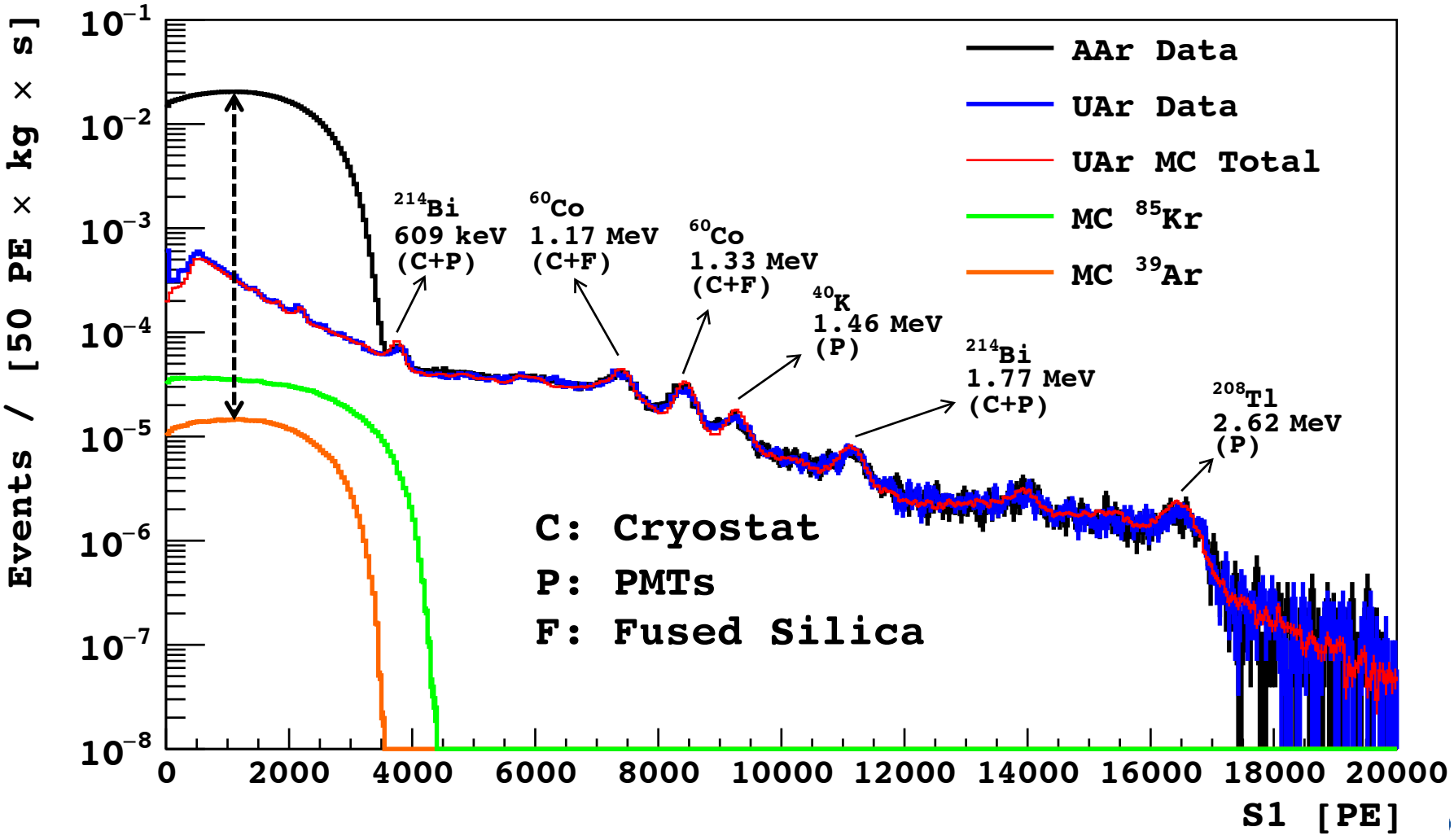
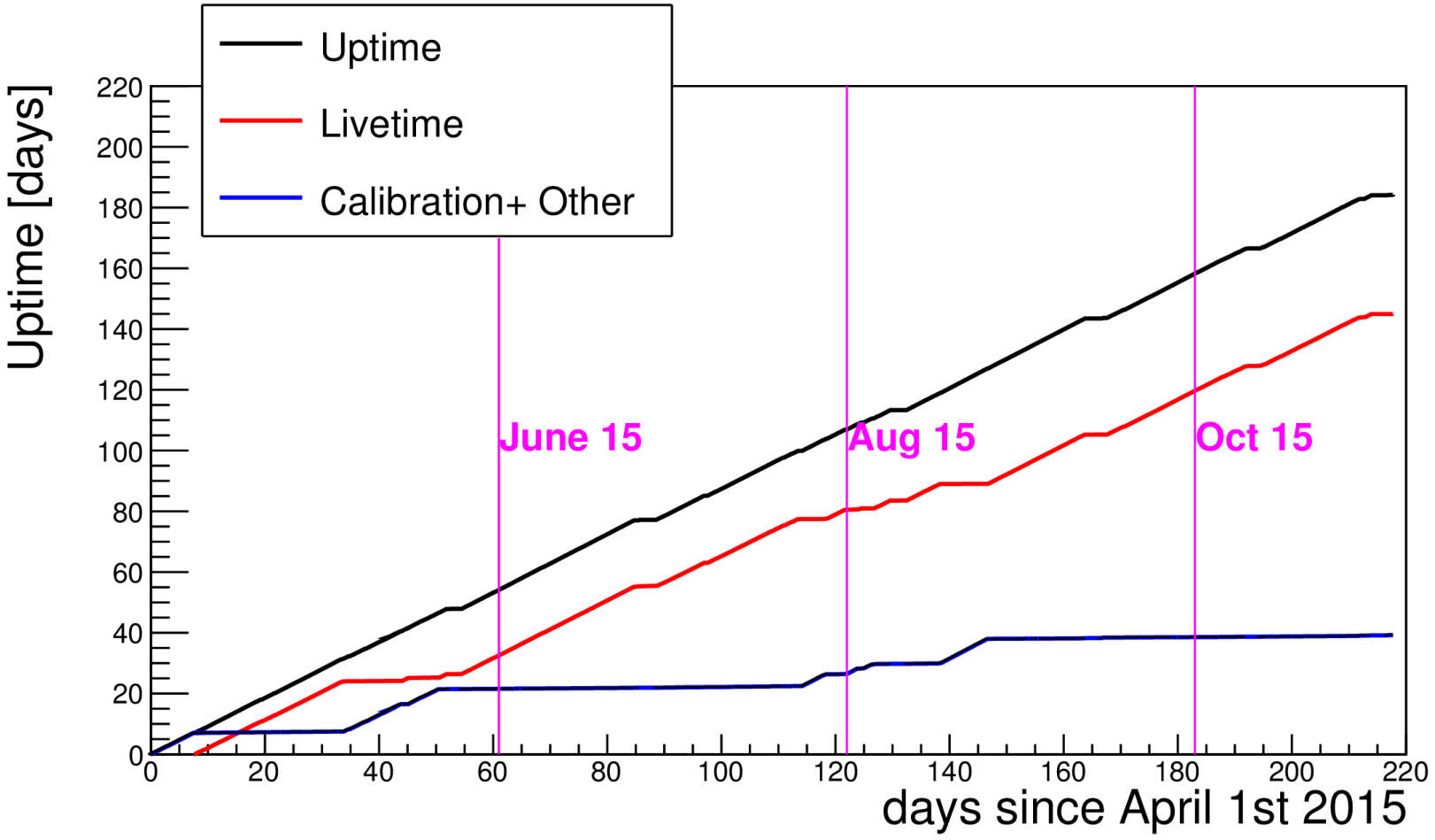
Underground Argon Running ..

^{39}Ar reduced a factor ~**1400** compared to atmospheric argon



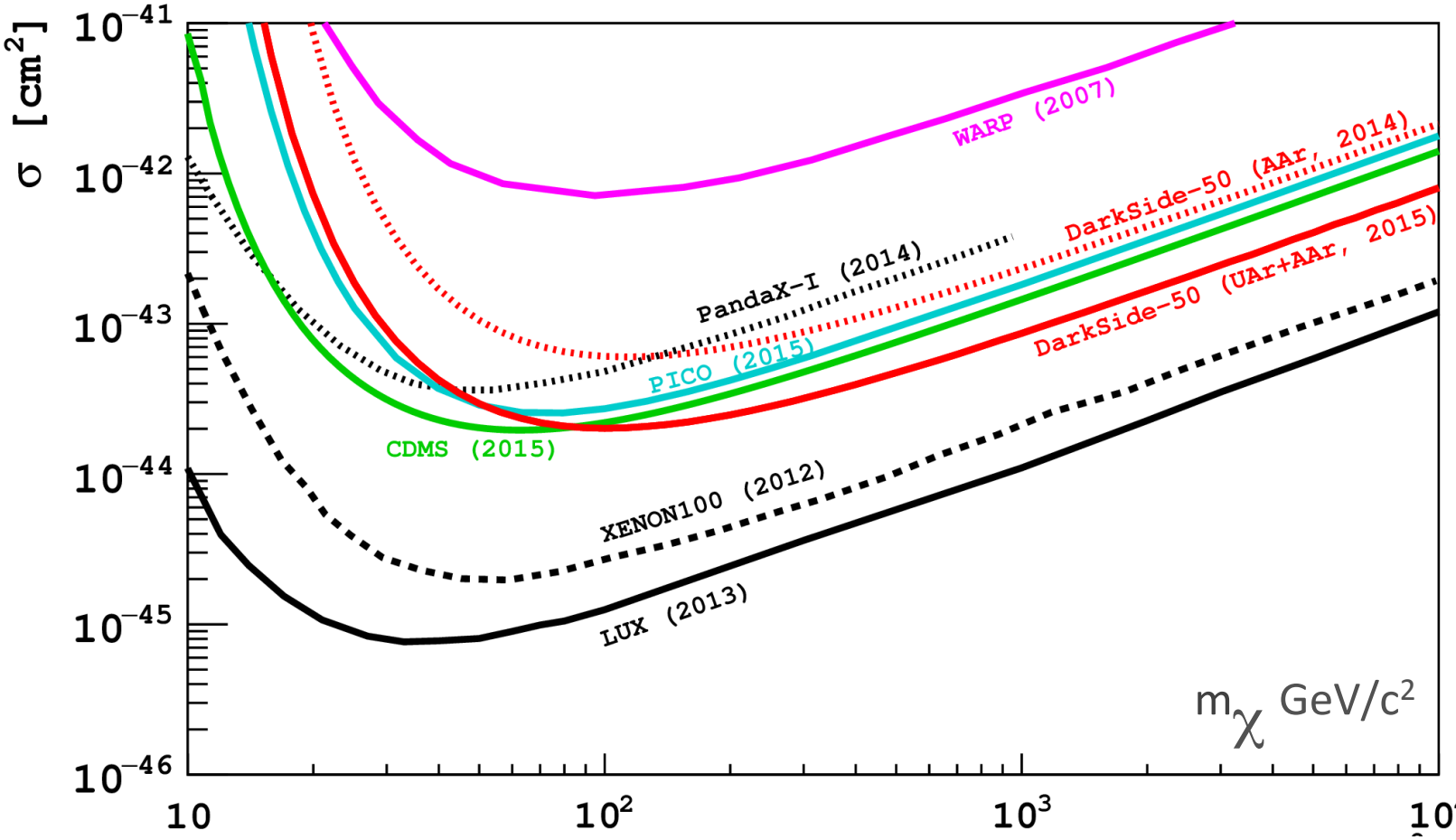
Underground argon running

Uptime now ~ 86 %, livetime during uptime ~ 95%



Underground Argon Running ..

New limit (10-17-15) on arXiv from 1450 kg-d AAr and 2650 kg-d UAr



Pico
CDMS
DS-50

Still background-free: developing blind analysis for larger data-set

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