

# Direct Dark Matter Detection

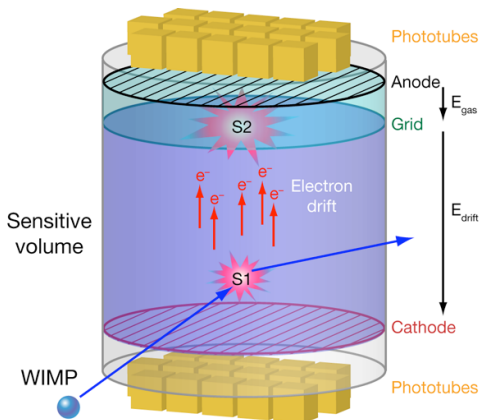
## Experiments and Results

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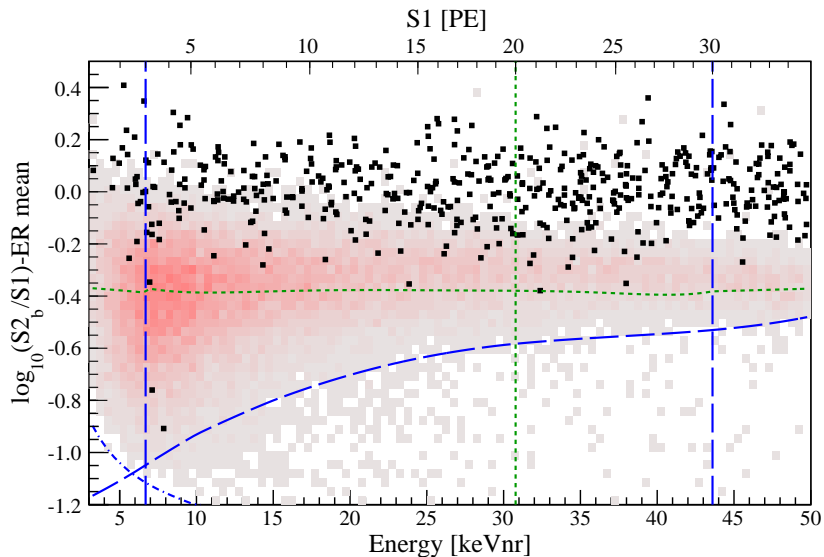
June 13, 2013

# The Xenon-100 detector

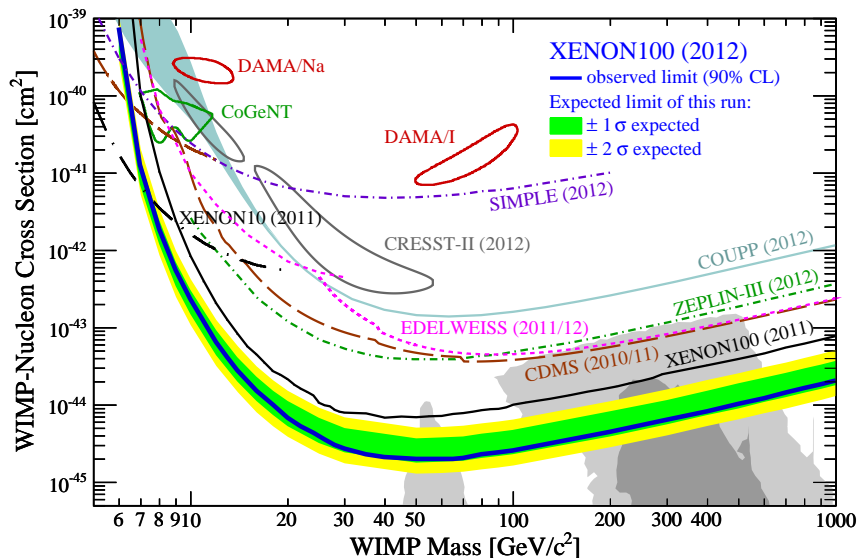


- Two-phase (liquid + gas) xenon detector
- **S1** signal: scintillation
- **S2** signal: ionization
- **S1/S2** different for nuclear recoils (= signal) and electron recoils (= background)

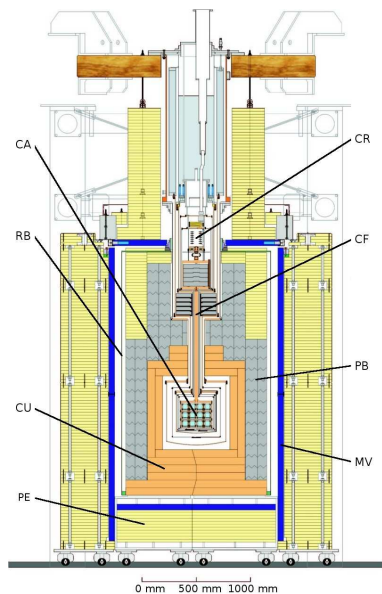
# Xenon-100 data



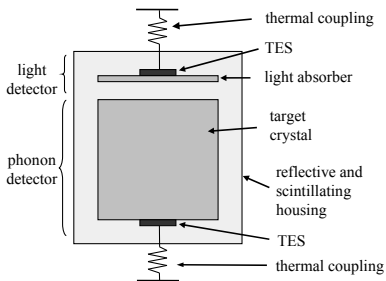
# Xenon-100 results



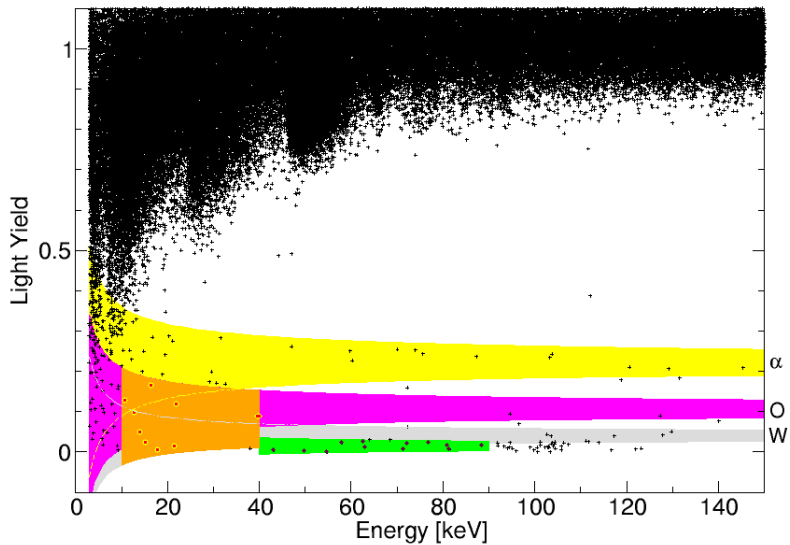
# The CRESST setup



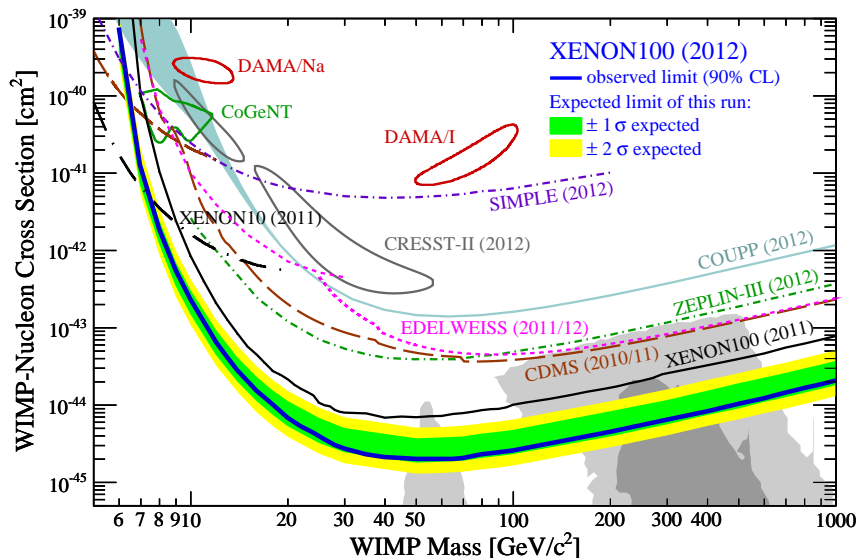
- $\text{CaWO}_4$  crystals
- Scintillation and phonon signals
- Superconducting phase transition thermometer (use large  $dR/dT$  at  $T_c$ )  
→ cryogenic
- Excess events seen
- Possibly due to mismodelling of  $\text{Pb-210}$  background



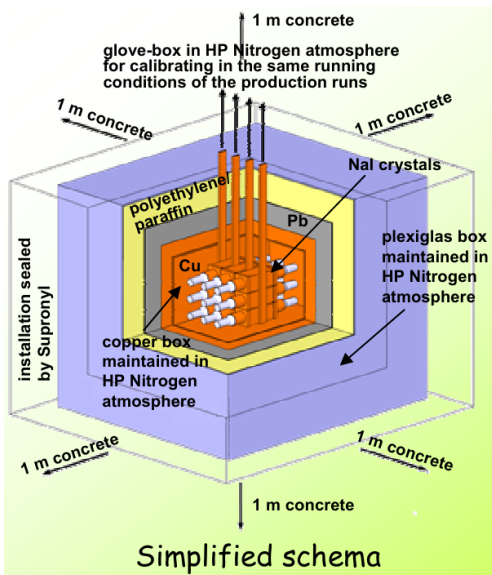
# CRESST data



# CRESST results



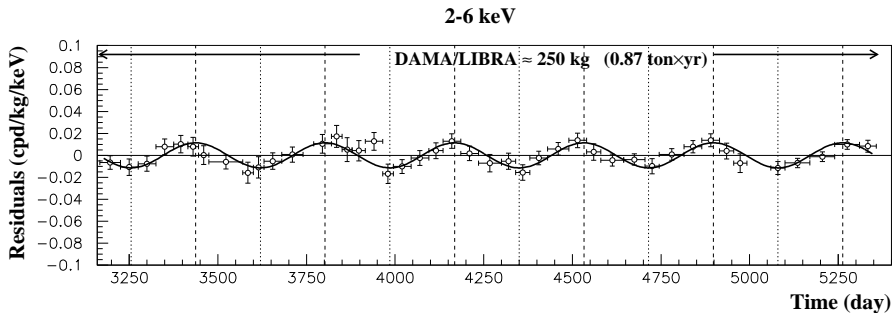
# The DAMA setup



- Very clean **Nal(Tl)** scintillator detectors
- No signal/background discrimination
- Use **annual modulation** as signature
- Strong annual modulation observed
- Result **highly controversial**



# DAMA data



# DAMA fit

