Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Online Data Quality and Bad Interval Detection for the CUORE Neutrinoless Double Beta Decay Search BRADFORD WELLIVER, Lawrence Berkeley Natl Lab, CUORE COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) is a large neutrinoless double beta decay ($0\nu\beta\beta$) search being installed underground at the Laboratori Nazionali del Gran Sasso (LNGS). $0\nu\beta\beta$ searches can address fundamental questions about the nature of the neutrino, such as whether it is a Dirac or Majorana fermion, its mass scale, and may provide insight into the observed matter-antimatter asymmetry in the universe. CUORE is the largest array of bolometer instrumented crystals in the world, nineteen times larger than the previous implementation used in CUORE-0, and contains a total of 988 TeO_2 crystals with a mass of 741kg and is expected to achieve a sensitivity on the ^{130}Te $0\nu\beta\beta$ half-life of $T_{1/2} = 9.5$ x 10^{25} years (90 % C.L.) after 5 years of operation. The large number of individual crystals in CUORE presents challenges for monitoring data quality and the determination of bad intervals of time in detector operation. We will discuss the work being performed to provide expanded online detector quality monitoring tools as well as the development of automated algorithms to test and identify periods of abnormal behavior across all of the individual detectors.

Bradford Welliver
Lawrence Berkeley Natl Lab

Date submitted: 01 Jul 2016 Electronic form version 1.4