

Title: In Search of Double Beta Decay

Date: Mar 09, 2012 01:00 PM

URL: <http://pirsa.org/12030094>

Abstract: Neutrino physics entered a new era in the last decade. With the discovery of a non-vanishing neutrino rest mass in oscillation experiments a variety of new questions showed up in the context of nuclear and particle physics. One of the crucial questions is the determination of the absolute neutrino mass, which cannot be measured in oscillation experiments. One option is neutrino-less double beta decay, the simultaneous conversion of two neutrons into two protons emitting two electrons. This total lepton number violating process requires that neutrinos are their own antiparticles and is considered to be gold plated. Furthermore, the measured half-life is directly linked with the neutrino mass. Currently, half-life measurements beyond 1025 years are discussed. This requires a large amount of the isotope of interest and a reduction of disturbing background to the smallest possible level. Indeed it is a search for the needle in a haystack. After a general introduction into double beta decay and the related physics, the talk will focus on the status of the experiments GERDA, COBRA and SNO+.

