

UNIVERSITY OF NOTRE DAME
DEPARTMENT OF PHYSICS

NUCLEAR SEMINAR

Monday, September 11

β -Decay Studies in Ion Traps: Placing Limits on Weak Tensor Currents from ${}^8\text{Li}$ and ${}^8\text{B}$ β -Delayed α Emission

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Precise measurements of the beta-neutrino angular correlation coefficient $a_{\beta\nu}$ can uncover new physics in the weak interaction, such as the existence of scalar or tensor currents. A particularly interesting case is the β -delayed α emission of ${}^8\text{Li}$ and ${}^8\text{B}$, which, due to additional correlations between the emitted particles, leads to an approximate gain in sensitivity to tensor currents by a factor of 3, as compared to normal regular β -decay. Beams of ${}^8\text{Li}$ and ${}^8\text{B}$ are produced at the ATLAS facility at Argonne National Laboratory, and are delivered to the Beta-decay Paul Trap (BPT). The backing-free and highly controlled environment of the BPT allows for precise manipulation of the trapped ions, and a by performing a β - α - α triple coincidence measurement the entire kinematics of the decay is constrained. Here I will report on recent results in the decay of ${}^8\text{B}$ and ${}^8\text{Li}$, and on improvements to be implemented in the next year. This work was carried out under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract No. DE-AC52-07NA27344.

4 pm – 5 pm

**Nuclear Science
Laboratory**

**124 Nieuwland
Science Hall**

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All interested  
persons are  
cordially invited  
to attend

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Refreshments will be
served prior to the
seminar in room 124