

Notes from ISAC Forum August 16, 2005

A. Experiments receiving beam in the previous two weeks

1. E973 e-e and e-gamma coincidences in ^{158}Tm decay using PACES with 8^*Pi to look for E0 transitions as an indicator of nuclear shape coexistence
 - found a new transition at 631 keV
 - collected terabytes of data
 - got time after E921 completed to remeasure 973 keV transition with proper coincidence threshold
2. E921 Isomers in ^{174}Tm
 - in previous study had found an isomer anomaly involving 2 gammas in the decay – a high-K isomer? a new level?
 - from K/L ratio for electron conversion could establish multipolarity of transitions.
 - decay is now believed to be $0^+ \rightarrow 153\text{keV} \rightarrow 3^- \rightarrow 100\text{keV} \rightarrow 4^-$
3. E1022 $\text{O-16} + \text{C-12} \rightarrow \text{Si-28} + \text{gamma(s)}$
 - used DRAGON BGO array + separator to look for gamma cascade from 25-MeV state through ^{28}Si states at 10-15 MeV in comparison to gamma decay directly to the ground state or first excited state
 - ran O-16 beam of 10 (p)nA on C foils
 - had good yields with distinctive patterns of gamma decays; needs detailed simulation to correct for limited acceptance for direct decay vs cascade
 - problems: C targets from ANL (got foil from TIGRESS); Roody periodically would hog CPU (mem. leak?)

B. Upcoming experiments

1. E870 $^{18}\text{Ne}(\alpha, p)$
 - will test apparatus/analysis using $^{10}\text{B}(\alpha, p)$ at 0.65 and 0.95 MeV/c
 - will be using a He gas cell at 0.5 bar
 - goal of $^{18}\text{Ne}(\alpha, p)$ is to resolve discrepancy between Louvain and ANL results
2. E1040 bNMR/bNQR
 - looking at sensitivity to the magnetic state of a thin (2000Å) film
 - will measure at $T > T_c$ to study the resonance and T_1 relaxation time both in a single experiment
 - will use both NMR and NQR beamlines

3. E1024 $40\text{Ca} + \alpha \rightarrow 44\text{Ti} + \gamma$
- have shown that the ionization chamber detector can separate 44Ti recoil product from 40Ca leaky beam
 - aim to measure 3 strong resonances as preliminary to detailed excitation function covering many weaker resonances

4. Yield of 38mK
- branch to 0^+ excited state in 38Ar hard to see because 1209 keV decay gammas were masked by other gammas, in previous look with TiC target
 - want to see if there is a more favourable ratio from a Ta target

C. Alternate target order in Schedule 108?

Andy Hurst had asked about the possibility of reversing the order of installation of the SiC and ZrC targets in the Fall/Winter schedule (108). If coupled with continued running on ITE until the end of Schedule 107, this would give more time for installation and laser power check on the ITW target during the mini-shutdown. The discussion during the meeting considered the impact of such a change on: readiness of experimental groups; readiness of laser group and number of optics changes; target readiness; availability of target modules.

There was a general reluctance to change the order of the revised draft schedule (SiC then ZrC target) but nothing which was impossible about the suggested change.

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