ISAC Science Forum, 2004-06-09

PRESENT: Friedhelm Ames, Corina Andreoui, Gordon Ball, Rick Bartman, John Behr, Pierre Bricault (PB), Lothar Buchmann (LB), 'Jac' Caggiano, Barry Davids (BD), John D'Auria (JDA), Paul Delheij (PD), Jens Dilling, Marik Dombsky (MD), Guido Ewald, Greg Hackman (GH), Andrew Hurst, Dave Hutcheon, Peter Jackson, Bob Laxdal (REL), Phil Levy, Kei Minamisono, Colin Morton, Wilfred Nörtershäuser, Matthew Pearson, Jean-Michel Poutissou, Jo Ressler, Chris Ruiz (CR), Rodolofo Sanchez, Paul Schmor, Martin Smith, Carl Svensson (CES), Pat Walden

Notes transcribed by GH

Reports on Prior Beam times

E871: Kei Minamisono

Measurements of the alignment term of ^{20}Na in ZnO and Mg were completed, but the reference measurement in ^{27}Na was unsuccessful. Differences in the raw measured data on the ^{20}Na alignment term were attributed to the difference between implanting in two-site ZnO and one-site Mg. In ^{27}Na the Q coupling constant was measured but there was also an unknown resonance that requires further investigation. Analysis continues.

ECR Tests: Pierre Bricault

Continued measurements showed that the Ne ionization efficiency is far superior with a fine-controlled Ar support gas and is as high as 0.8% with 10 μA of proton beam on the SiC target. Furthermore the ECR is easier to start with Ar. Yields of radioactive species were linear with increasing proton current. In subsequent discussion it was noted that when 3 μA proton beam was first put on the target there was a huge C beam that eventually died away; PB recommends "curing" carbide targets with proton beam before starting the ECR source. When asked whether the existing ECR source would be useful for heavier beams, he reported that the ionization efficiency for Xe was measured at 62% on the offline ECR but that there was know way of knowing what it would be online..

E985: Martin Smith, Carl Svensson

After 90 hours of running with ~10^5 atoms/s, the lifetime of ^{18}Ne was deduced from gamma ray decay curves measured with the 8π/SCEPTAR to 0.1% statistical precision. ^{19}Ne was also measured to be within the literature values, from which one can conclude that any diffusion effect is much smaller than the statistical error. PB pointed out that the SCEPTAR signal was valuable tuning and re-iterated that low current diagnostics are critically needed. CES pointed out that if the ionization efficiency for Ar was 10 times that for Ne, then the ^{34}Ar experiments (E909) were now possible with the existing ECR source and with proven targets.

Report on Upcoming Experiments

^{26g}Al(p,γ) at DRAGON: Chris Ruiz

In previous forums, CR reported that the success of the ^{26g}Al(p,γ) DRAGON experiments relied on being able to determine the isobaric contamination of the beam, so as to determine actual incident ^{26g}Al flux from total beam current. A horn-shaped collimator has been installed for detecting $\beta^-$from ^{26}Na or β^{+2} from ^{6m}Al, the latter being positively identified by annihilation radiation with two 3x3 NaI's. Also an HPGe installed at the mass slit box will positively identify ^{26}Na from 1809 keV γ rays. The final set of test runs begins June 1`4.

E984: Fast lifetime measurements: First tests

Two approved ISAC experiments, proposed by new faculty members at collaborating institutions (Paul Garrett and Jo Ressler), use fast electronic timing with BaF_2 scintillators installed as complementary detectors in the 8π/SCEPTAR setup. Electronics for these measurements have been delivered from Lawrence Livermore National Laboratory. For proof of principle tests, a set of BaF_2 scintillators have been loaned by University of Surrey (UK). A ^{26}Na beam will be used to determine the time resolution of the BaF_2 subsystem and of the BaF_2-SCEPTAR β-γ coincidence system.

Other Business: none

Items for Future Discussion:

PD: ^{22}Na source for LTNO
BD: report from EMMA workshop (11 June 04)

NEXT ISAC SCIENCE FORUM: June 23