Minutes of the ISAC Science Forum
held on Wednesday Oct 12th 2005.

Review of past 2 week's experiments:

β-NMR:…… reported by R.Kiefl
Rob reported on several measurement that took place before and after the mini-shutdown. The ISAC operation was reestablished quickly after the 10 days of interruption, however the run was cut short by a catastrophic failure of the laser system providing the ^{8}Li beam polarization. Phil is exploring his options for either replacement of the Ar laser or buying a more modern solid state one. He expects to be back on the air by Dec 1st.
Rob commented on the study of electron-doped super conductors (PrCeCuO4).The group has developed a technique for estimating the London penetration depth of these samples and they have measure its temperature dependence. This is done by observing the width of the NMR resonance in a thin film (400A) deposited over the sample, at low magnetic field. The preliminary analysis indicates a linear behavior characteristic of d-wave pairing (as is the case for hole-doped superconductors).
This technique is giving access to studying any magnetic superconductors.
The relaxation of the ^{8}Li polarization in thin Palladium films showed very large Knight shifts which are not following the standard Korringa relaxation rate (due to conduction electrons) and indicate other relaxation mechanism.
A conventional NbSe2 superconductor sample was studied at low magnetic fields to determine the nuclear spin dependant relaxation mechanism. They are able to determine the London penetration depth of the sample even when in the Meissner state of its vortex phase.

E1024 ^{40}Ca(α,γ)^{44}Ti……reported by J.Caggiano

This reaction is controlling the production of ^{44}Ti in the universe. This capture measurement is compared to previous gamma rays and radiochemical measurements. An excellent beam was provided by OLIS (more correctly by Keerty! and his team . Up to 10pna with low Ar contamination was used -as much as Dragon could take. A calibration shift was uncovered with the Prague Magnet which is probably related to some defining slits that have been introduced for the S-bend configuration. R.Laxdal will examine this. The surprising results is that although the strength of the 9.2 MeV resonance is confirmed, significant strength also exists below, in between previously established resonances. More analysis is underway.

"Development of polarized ^{20}F beam ---------- reported by Phil Levy

Phil and his group have been investigating the feasibility of polarizing ^{20}F beam for an eventual experiment for the Minamisono group. The only component that can be

polarized is the metastable atomic state (3.7 microsec) produced during neutralization of the F+ beam in the Na cell. The metastables are then reionized preferentially (relative to the ground state atoms) in a He gas reionizer cell. They found that approximately 24% of the reionized ^{19}F beam was derived from metastables. Estimating that the metastable polarization would be typically 50% in practice, the overall beam polarization attainable is estimated to be 12%. Because of several favorable factors, it is expected that the polarization attainable in a ^{15}O beam would be three times higher.
He also praised the excellent stability of the fluorine beam provided by OLIS."

Upcoming runs:

989: ^{26}Al(p,γ)…….reported by Jac Caggiano

The measurement of the 188 keV resonance strength is scheduled to resume for the next three weeks. A random coincidence rate between ^{26}Na contaminants which are stopped near or in the target producing a high energy gamma ray in the BGO array, with leaky beam triggering the far detector has been identified in the Jul run. An IRIS restriction has been mounted ahead of the target to try and catch this unwanted beam well ahead of the BGO location. Some concerns were raised about the scattering of the beam that could produce more spill than before. This will have to be studied and a decision made on the optimal opening for the IRIS. All systems are operating nominally and the TRILIS ion source is providing of the order of a factor 6 increase over surface ionization.

Other requests:
JMP asked that brief highlights of recent conferences/workshops relevant to ISAC Science be presented at the next forum: Including Ganil ICIS05 , NuPAC at ISOLDE, DNP05,the TUDA York workshop.