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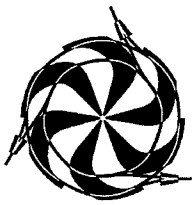

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Gôtz Ruprecht
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Dear Gôtz:

I am very pleased to be able to inform you that, at its meeting held July 24 & 25, 2006, the TRIUMF Subatomic Experiments Evaluation Committee recommended that your experiment **E1110** be approved for **28** shifts of beam time at **medium-high** priority. A copy of the report of the Committee is enclosed for your information.

As you are aware, the experiment will have to undergo a formal safety review by the TRIUMF Science Division Safety Committee before being allocated beam time. In addition, a Technical Review will be required outlining technical demands the experiment will place on TRIUMF (space, cryogenics and electrical support, machine shop, electronics shop, drawing office, detector facility, electronics pool, and wire chamber support). According to our policy, no experiments will be scheduled for beam without the relevant safety approvals and technical reviews.

At year-end, the TRIUMF Publications Office may request a report on your experiment for the TRIUMF Annual Report. We would also like to request that you give appropriate acknowledgement to TRIUMF in any of your talks and/or publications.

Let me congratulate you and your colleagues, and wish you every success with your experiment. Please let me know if I can be of help in any way.

Yours sincerely,

G A Hutcheon for JMP

J-M. Poutissou
Associate Director, TRIUMF

Encl.

1110	$^{18}Ne(\alpha,p)^{21}Na$ via $^{18}Ne(^{6}Li,d)^{22}Mg^{*}$ Alpha Transfer	G. Ruprecht

Proposal E1110 describes a transfer reaction measurement which would be used to extract spectroscopic factors and then alpha widths for states in ^{22}Mg that contribute to the $^{18}Ne(\alpha,p)^{21}Na$ reaction. The experiment could provide important indirect information on this astrophysical reaction rate, which is difficult to obtain otherwise. Since the alpha widths are likely much smaller than the proton widths for the states that are important in the reaction, a determination of the alpha widths fixes the capture cross-section, except for interference effects.

The technique of using alpha transfer reactions to decipher alpha widths is one that has a long history. There is much evidence in the literature which shows that it is not straightforward to extract reliable spectroscopic information using reactions like (^{6}Li,d) or (^{7}Li,t). Much of the problem relates to the strongly peripheral nature of these reactions. The analysis of them via the usual DWBA formalism gives spectroscopic factors which are very sensitive to the optical model and Woods-Saxon well parameters. Running at the relatively low energies afforded by ISAC-II just exacerbates this problem. Even simple transfer reactions like (d,p) suffer from being highly peripheral at ISAC-II type beam energies. One way proposed to deal with this is to run at more than one beam energy and then use the sensitivity to the asymptotics of the overlap function to get better sensitivity to spectroscopic factors.

As proposed, the experiment would suffer from large systematic effects in the analysis, which would limit the extraction of reliable spectroscopic factors. Even with this limitation, the information that could be obtained would be very useful. The other issue is the energy resolution. Since the level spacing is rather small, it may not be possible to cleanly separate the states of interest in this kind of reaction. The combination of these two effects will make it difficult to assess the reliability of the results.

The EEC sees this as an important future indirect technique provided issues surrounding the reaction mechanism and the extraction of spectroscopic factors can be better understood.

RECOMMENDATION: 28 shifts at medium-high priority