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FOR PARTICLE AND NUCLEAR PHYSICS

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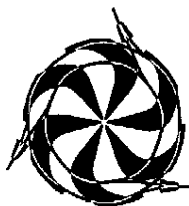
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UNDER A CONTRIBUTION THROUGH THE
NATIONAL RESEARCH COUNCIL OF CANADA



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Marialuisa Aliotta
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Dear Dr. Aliotta:

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 **E1103** be approved for **24** shifts of beam time at **medium** 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,

J-M. Poutissou
Associate Director, TRIUMF

Encl.

1103	(α,p) Reactions in Type 1 X-ray Bursts: Time-Reversed Approach at ISAC-II	M. Aliotta/ R. Lewis
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Proposal E1103 requests beam time to measure the $p(^{21}\text{Na},\alpha)^{18}\text{Ne}$ reaction. For ground state to ground state transitions, this is the inverse of $^{18}\text{Ne}(\alpha,p)^{21}\text{Na}$ which is considered to be a breakout reaction from the HCNO cycle. The reaction rate for $^{18}\text{Ne}(\alpha,p)^{21}\text{Na}$ is very uncertain. Direct measurements have been carried out at energies significantly higher than those which are important in explosive stellar processes. Indirect measurements using the $p(^{21}\text{Na},\alpha)^{18}\text{Ne}$ reaction have also been carried out with very low intensity ^{21}Na beams produced by transfer reactions. There is a discrepancy between the two types of measurements that is not understood. Clearly more information about this reaction rate is needed.

The collaborators on E1103 have proposed carrying out a more detailed study of the inverse reaction than has been done to date. This experiment is expected to be the first in a program to study (α ,p) reactions that are important in explosive nucleosynthesis via inverse reactions. Very little is known about any of the other reaction rates mentioned in the proposal.

Much interest is now focused on the $^{18}\text{Ne}(\alpha,p)^{21}\text{Na}$ reaction, including three new proposals to carry out experiments at TRIUMF. It is likely that this reaction rate will be much better understood in the near future. Consequently the EEC believes that the proposed inverse reaction measurement may help provide a test for how well the technique can determine the (α ,p) reaction rate, which includes transitions to excited states in the final nucleus that are not excited in the inverse reaction. This measurement will also serve as a way to verify the operation of the experimental setup for future measurements.

RECOMMENDATION: 24 shifts at medium priority