

Beam Request

For Lab. use

Exp. No.:	Session No.
157.1	33

Title of Experiment **Investigation of the $^3\text{He}\eta$ final state in the $dp \rightarrow ^3\text{He}\eta$ reaction at ANKE**

Collaborators:

_____ The ANKE collaboration _____

Institute:

(Continue on separate sheet if necessary)

Spokesman for collaboration:

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Is support from the LSF program of the EC requested?

No

Date: March-19-2007

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Total number of particles and type of beam (p,d,polarization)	Momentum range (MeV/c)	Intensity or internal reaction rate (particles per second)	
		minimum needed	maximum useful
polarized d Int. => 10^{10}	2435 and 3118 - 3185	$L \sim 1 \cdot 10^{30} \text{ cm}^{-2}\text{s}^{-1}$	
Type of target	Safety aspects (if any)	Earliest date of installation	Total beam time (weeks)
H ₂ , Cluster jet		September 2007	1 week (after MD week)

What equipment, floorspace etc. is expected from Forschungszentrum Jülich/IKP?

ANKE spectrometer

Summary of experiment (do not exceed this space):

Very successful measurements of the near-threshold production of the $^3\text{He}\eta$ final state in unpolarized deuteron-proton collisions have recently been carried out at ANKE, which led to very high precision data on total and differential cross sections. The corresponding results are submitted to Phys. Rev. Lett. for publication. Next step is to investigate the spin dependence of the near-threshold behavior of the excitation function of the reaction $dp \rightarrow ^3\text{He}\eta$ using a polarized COSY deuteron beam. Therefore we have applied for a beam time and during the 31th PAC session the proposal (#157) was approved and **one week** of beam time has been **granted**.

To determine the deuteron beam polarizations (P_z, P_{zz}), the *polarization export technique* will be used [1]. Although measurements with an unpolarized ramped COSY beam are a standard procedure at COSY, the planned experiment is much more challenging since ramping is planned to be embedded into the *polarization export* which has not been performed up to now at COSY. In order to provide the required COSY beam conditions for these measurements, we request for **one week of beam time directly after a COSY MD week in autumn 2007**.

[1] A. Kacharava, F. Rathmann, C. Wilkin, COSY Proposal #152: *Spin Physics from COSY to FAIR*, (2005).

Attach scientific justification and a description of the experiment providing the following information:

For proposals:

Total beam time (or number of particles) needed; specification of all necessary resources

For beam requests:

Remaining beam time (allocations minus time already taken)

Scientific justification:

- What are you trying to learn?
- What is the relation to theory?
- Why is this experiment unique?

Details of experiment:

- Description of apparatus.
- What is the status of the apparatus?
- What targets will be used and who will supply them?
- What parameters are to be measured and how are they measured?
- Estimates of solid angle, counting rate, background, etc., and assumptions used to make these estimates.
- Details which determine the time requested.
- How will the analysis be performed and where?

General information:

- Status of data taken in previous studies.
- What makes COSY suitable for the experiment?
- Other considerations relevant to the review of the proposal by the PAC.

EC-Support:

The European Commission supports access of new users from member and associated states to COSY. Travel and subsistence costs can be granted in the frame of the program Access to Large Scale Facilities (LSF).