



### Summary of experiment:

The aim of our experimental programme is the investigation of the spin-dependent amplitudes of the small angle neutron-proton charge exchange reaction through the study of the  $p(\vec{d}, 2p)n$  reaction. Following the results of our short test run using the hydrogen cluster target, we are now in position to measure the cross section and the two tensor analysing powers  $T_{20}$  and  $T_{22}$  for the  $\vec{d}p \rightarrow (pp)_{Iso}n$  reaction of polarised deuterons on an unpolarised target leading to the two final protons at low excitation energy being in the  ${}^2He$  peak. Such measurements will allow the determination of the moduli of the three spin-spin amplitudes at energies per nucleon above those accessible at LAMPF up to the maximum available at COSY.

The polarimetry will be carried out with a combination of the reactions  $p(\vec{d}, 2p)n$ ,  $p(\vec{d}, d)p$ , and  $p(\vec{d}, {}^3He)\pi^0$  at a beam energy of  $T_d = 1.2 GeV$  using the “Global Jump” technique. We request **THREE WEEKS** of polarised deuteron beam time at the energies of 1.8, 2.0, and 2.2 GeV in order to complete this part of the programme.

In order to obtain information on the relative phases of the amplitudes, in the second part of the programme we will measure the spin-correlation parameter  $C_m$  of transversally polarised deuterons interacting in a transversally polarised hydrogen target. This will require the use of the polarised gas cell that we have developed. In order to prove that the extended interaction region, with its loss of geometrical constraints, can be handled successfully, we further request **ONE WEEK** of beam time to repeat some of the earlier measurements with the target cell filled with **unpolarised** gas.