Neutron Spin Precession in Samples of Polarised Nuclei

B. van den Brandt[1], H. Glättli[2],
H. Grießhammer[3], P. Hautle[1], J. Kohlbrecher[1], J.A. Konter[1],
F.M. Piegsa[1,4], J.P. Urrego-Blanco[1,5], O. Zimmer[4]

[1]*Paul Scherrer Institute, CH-5232 Villigen PSI, Switzerland*
[2]*SPEC and LLB, CEA Saclay, F-91191 Gif-sur-Yvette Cedex, France*
[3]*Centre for Nuclear Studies, Dept. Physics, George Washington Univ., Washington, DC 20052, USA*
[4]*Physics Department, Technische Universität München, D-85748 Garching, Germany*
[5]*Dept. Physics and Astronomy, University of Tennessee, Knoxville, TN 37996, USA*

Abstract. This poster reports on an ongoing experiment which is carried out at the cold, polarised neuron beam line FUNSPIN at SINQ at the Paul Scherrer Institute in Switzerland. The goal is to substantially increase the accuracy of a crucial input parameter for novel effective field theories – the doublet scattering length $b_{2,d}$ of the 3 nucleon system neutron-deuteron. The experiment employs Ramsey's technique of separated oscillating fields to measure the pseudomagnetic precession angle of neutron spins passing through a sample with polarised nuclei, which can be related to $b_{2,d}$.