PROGRESS IN THE POLARIZATION OF HD

S. Bouchigny, C. Commeaux, J.-P. Didelez and G. Rouillé

IN2P3, Institut de Physique Nucléaire, 91406 Orsay, France

The static polarization of HD samples has been achieved using "brute force", for HD samples purified by double distillation. Proton polarization in excess of 60% and deuteron vector polarization higher than 14% have been reached. It has been demonstrated that the ageing technique allows to get relaxation times at 1.5 K and 1 T larger than a week [1]. It is advocated that the conventional dynamic polarization of HD should be feasible for the proton and the deuteron contained in the HD molecule. This would simplify considerably the machinery presently necessary to perform nuclear physics experiments with HD targets polarized by the static method. On the other hand, if feasible, the dynamic polarization of HD would open the possibility to polarize DT, which has the same magnetic structure as HD and is the ideal fuel for Inertial HIF. According to Kulsrud [2], the full polarization of D and T nuclei should increase the reactivity of the DT fuel by 50%.

1 S. Bouchigny *et al.*, *Proceedings of the Second International Symposium on the GDH Sum Rule and the Spin Structure of the Nucleon, Genova, Italy, July 2002, p 139.* World Scientific, Ed. M. Anghinolfi, M. Battaglieri and R. De Vita.

2 R. M. Kulsrud, H. P. Furth, E. J. Valeo and M. Goldhaber, Phys. Rev. Lett. 49 (1982) 1248