

Structure and Dynamics of Hydrogen-bonded Systems
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Title:

**Proton momentum distribution of water
confined in nanopores, protein hydration shells and DNA**

Speaker:

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Abstract:

Experimental determinations of proton momentum distribution on water adsorbed in silica MCM-41, in weakly hydrated proteins and DNA will be presented. The measurements have been carried out through deep inelastic neutron scattering. The results provide an insights into the short-scale dynamics and effective single-particle potential of water protons in these environments. In particular, the water-silanol interactions, the proton delocalization on the protein surfaces, and the zero-point contributions to DNA energetics will be discussed.

References:

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- V. Garbuio, C. Andreani, S. Imberti, A. Pietropaolo, G. F. Reiter, R. Senesi, M. A. Ricci, *J. Chem. Phys.* **127**, 154501 (2007).