Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Water confinement in three different substances[1] SAHAR MIRSHAMSI, HAI-PING CHENG, Department of Physics and Quantum Theory Project, University of Florida, Gainesville, FL 32611 — Confined water in nanopores of different materials appears in geological, physical, industrial and biological systems. Confined water demonstrates significantly different behavior than bulk water, which has motivated researchers to study the effects of confinement on structural and dynamical properties of water. We study the confinement of water in silica, carbon nanotubes, and gold nano-pores and compare the effect of these different materials on the properties of water. Compared to bulk water viscosity, we find that the viscosity of water increases in silica nano-pores but decreases when confined in carbon nanotubes. Increasing water density inside the silica nano-pores further increases water viscosity. Finally, we discuss how the diffusion coefficient of water and its density profile changes due to confinement.

[1]This work is supported by NSF/PHY-1068138.

Sahar Mirshamsi
Department of Physics and Quantum Theory Project,
University of Florida, Gainesville, FL 32611

Date submitted: 15 Nov 2013 Electronic form version 1.4