Abstract Submitted
for the OSS05 Meeting of
The American Physical Society

Intrinsic Compressibility of Sperm Whale Myoglobin Determined from High-Pressure Crystallographic Structures JEREMY CLARK, PAUL URAYAMA, Miami University, Department of Physics — Myoglobin, considered a paradigm for biocomplexity, may serve as a model system for studying the role of cavities and volume fluctuations in proteins. Volume fluctuations are directly probed by pressure via the compressibility. While the physico-chemical basis for pressure effects is well established, effects in structurally complex systems have yet to be fully explored. Biocomplexity can lead to significant effects at moderate, kilo-atmosphere pressures, and is the reason detailed structural information under pressure is needed to understand pressure effects in proteins and other biological systems. Structural determination of proteins at kilo-atmosphere pressures using x-ray crystallography is a powerful method for investigating the effects of pressure on structure. Here we present results quantifying the spatial distribution of intrinsic compressibility in sperm whale myoglobin calculated from crystallographic structures solved at ambient and at 1500 atm pressures.

Paul Urayama
Miami University, Department of Physics

Date submitted: 18 Mar 2005 Electronic form version 1.4