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Neutron Spin Echo Studies of Protein Dynamics JYOTSANA LAL, Argonne National Laboratory, Argonne, IL-60439, USA, PETER FOUQUET, Institut Laue-Langevin, Grenoble Cedex 9, France, MARCO MACCARINI, Institut Laue-Langevin, Grenoble Cedex 9, France, LEE MAKOWSKI, Argonne National Laboratory, Argonne, IL-60439, USA — Neutron spin-echo (NSE) spectroscopy was used to study structural fluctuations that occur in hemoglobin (Hb) and myglobin (Mb) in solution. Using NSE in conjunction with Wide Angle X-ray Scattering (WAXS) to very high momentum transfer, q (up to 0.62 inverse Angstroms), the internal dynamics of these proteins were characterized at the level of the dynamical pair correlation function and self-correlation function in the time range of several picoseconds to a few nanoseconds. Comparison of data from the two homologous proteins collected at different temperatures and protein concentrations was used to assess the contributions to the data made by translational and rotational diffusion and internal modes of motion.

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