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Laser-neutron pump-probe experiment at the neutron time-of-flight spectrometer TOFTOF

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Photosynthesis is one of the key mechanisms for “energy generation” in nature. It is controlled and driven by photoactive proteins. Their functionality is critically influenced by molecular movements in the range of ps – ns and sub-Å – nm. For comprehensive investigations of such systems it is necessary to gain information about the connection of their dynamics and functionality during and shortly after activation. The setup of the neutron time-of-flight spectrometer TOFTOF at MLZ-Garching is well suited for experiments, using quasielastic neutron scattering (QENS), in order to observe such, energetically low, motions in unordered materials. Therefore, at the instrument TOFTOF a novel sample environment system is to be installed. It will allow illumination of the sample during neutron measurement with light of specific wavelength. It is planned to apply the new system for photosensitive proteins, which undergo a photocycle, associated with the process of “energy generation”, triggered by the absorption of a photon.

On the poster I will give an overview about the new setup and hopefully first results of measurement campaigns.

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