



11th June, 2015 - 14:00
CFEL-bldg. 99, seminar room IV (O1.111)

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**Towards time resolved structures of
membrane proteins using a hard
X-ray Free electron laser**

Structure determination of macromolecular proteins by conventional X-ray crystallography has been limited by radiation damage and time resolution. The recently developed technique of Serial femtosecond X-ray crystallography (SFX) has overcome these limitations ^{1,2,3}.

The short < 50 fs pulses of a Free Electron Laser (FEL) generate diffraction pattern which can be used for structure determination to near atomic resolution ^{2,5,7,8}. The use of pump probe laser before the diffraction allows the transition from molecular snapshots to molecular movies ^{3,9}. For structure refinement newly developed methods as Dynamic Elastic Networks (DEN) are applied ⁴. The use of lipidic cubic phase injectors reduces enormously the crystal consumption compared to the regular liquid jet and led to room temperature determination of G protein coupled receptors (GPCR) ^{5,6}.

References:

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