

EyeN SE: A window into the world of biomolecular nanomachines

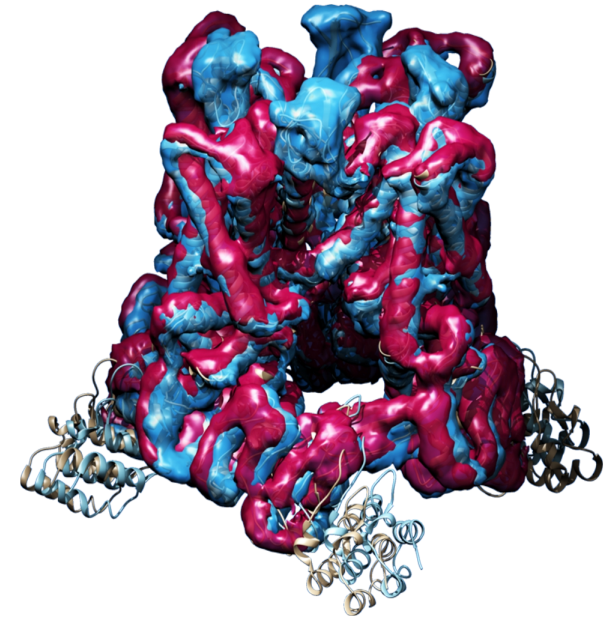
Mgr. Lukáš Maršálek

3D cryo-electron microscopy enables us to determine a high-resolution native structure of biological macromolecules (proteins, nucleic acids, viruses, etc.). In the last couple of years, it has become an indispensable tool for understanding the chemical processes of life as well as development of new potent drugs. It has been used in a wide variety of scenarios ranging from understanding of Alzheimer's disease to developing new anti-cancer treatments. Its significance is underpinned by awarding 2017 Nobel Prize for Chemistry to the founders of the field.

A key principle behind cryo-electron microscopy is to illuminate a shock-frozen laboratory sample with a low-dose electron beam. Challenge on its own, it is only a beginning, as an interpretable 3D image has to be computationally assembled from these highly noisy measurements. The lecture will introduce the corresponding discrete inverse problems, applications of Fourier transform in electron optics and practical computational considerations.

Depending on the audience, the lecture will be held in Czech or English.

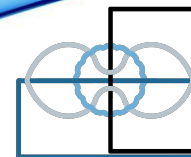
Lukáš Maršálek graduated from MFF UK in Software Systems, leaving afterwards for Saarland University in Germany to do basic research in computational radiation simulation, followed by industrial research in cryoEM. In 2013 he co-founded EyeN SE in Prague and serves as its CEO since 2016.



středa 19. prosince

17:30 v posluchárně K1

MFF UK, Sokolovská 83



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