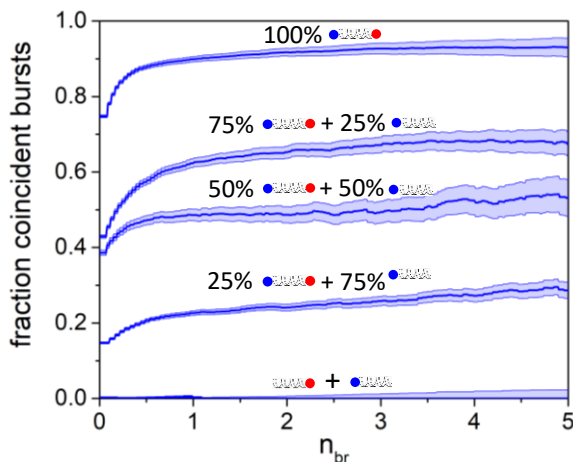
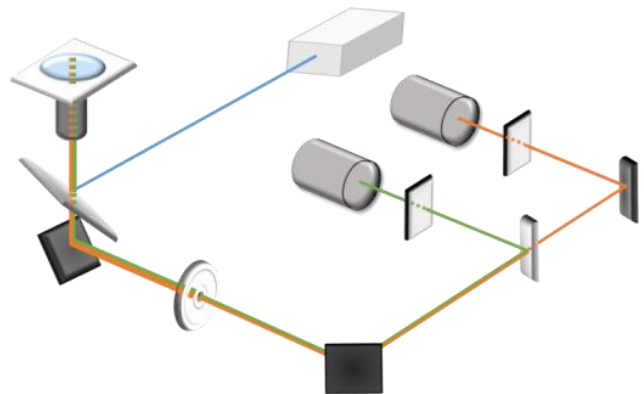


Bachelor- /Masterarbeit

Single-Molecule Fluorescence Spectroscopy for Precise Determination of Molecular Binding Fractions

The characterization of molecular interactions is a key to understanding for many biological processes. Fluorescence spectroscopy is a powerful tool to access conformational changes, diffusion properties and interaction strength [1]. Many biological processes depend on the interaction of two or more molecule species (e.g. two proteins or enzyme + ligand), which can be characterized by the determination of binding fractions.



Trough TCCD (Two color coincidence detection) we can quantify the interaction of molecules marked with different fluorophores on a single molecule level [2]. To check the reliability of quantification and precision of the method, we employ model samples with well-known properties. The aim of the project is to investigate how different properties of molecules (e.g. diffusion time through the confocal volume) affect the applicability of TCCD.

Literature:

- [1] Deniz et al., *Annu. Rev. Phys. Chem.* 52:233 (2001)
- [2] Höfig et al., *Commun. Biol.* 2:459 (2019)

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