INVESTIGATION AND COMPENSATION OF IMAGING ARTEFACTS IN LOCALIZATION-BASED SUPER-RESOLUTION MICROSCOPY

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Interpretation of high resolution images provided by localization-based microscopy techniques is a challenge due to imaging artefacts that can be categorized by their origin. They can be introduced by the optical system, by the studied sample or by the applied algorithms. Some artefacts can be eliminated via precise calibration procedures, others can be reduced only below a certain value. The introduced artefacts were studied both theoretically and experimentally. Simulations were made with OSLO, optical simulator software (provided by Lambda Research Corp.) to model the imaging system. The localization-based imaging process was modelled with TestSTORM [1, 2], test sample generator program for localization-based microscopy. Issues in multicolour localization-based super-resolution microscopy technique were also analyzed such as the effect of the chromatic error [3]. By means of simulations we are able to vary easily the imaging and sample parameters (Figure 1.) and determine a process window where the imaging is optimal.

REFERENCES