

Cumulant microscopy



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cumulant images; high
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brightness

Intellectual Property

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Description

Microscopy system and method for imaging and stochastic analysis of blinking point like emitters. The multipole order cumulants analysis is based on an established blinking model which enables the extraction of super-resolved environment related parameter maps, such as molecular state lifetimes, concentration and brightness distributions of the emitter. This map can also be used to compensate for the nonlinear brightness and blinking response of high order cumulant images, such as for Super Resolution Optical Fluctuation Imaging (SOFI), to achieve a balance image contrast.

Possibility to expand the range of suitable probes for blinking based super-resolution using illumination induced fluctuations

Applications

- Cumulant microscopy
- Super resolved multi colour colocalization, FRET, anisotropy analysis using cross cumulants in different spectral and / or polarisation channels

Advantages

Structures that otherwise would be masked by brighter regions in the conventional cumulant image become samples using spectral cross cumulants.

Possibility to combine cumulant and localization based super resolution

techniques to increase performance and applicability