

Sparsity-based analysis of superresolution microscopy data

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Modern superresolution microscopy techniques often require a data processing step in order to obtain sharp high resolution images from the noisy, blurred and in other ways convoluted raw images, depending on the experimental method at hand. By incorporating as much prior knowledge as possible about the object being observed and the physics of the imaging process, a model can be constructed which has an inherent sparse structure. This is in contrast to the raw (and final) images which need not be sparse. Using stochastic estimation theory, the sparsity constraints can be exploited to yield high quality images which could not be obtained with standard deconvolution methods.

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