

## **Method for assessing the spatiotemporal resolution of structured illumination microscopy (SIM): supplement**

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# A method for assessing the spatiotemporal resolution of Structured Illumination Microscopy (SIM): supplemental document

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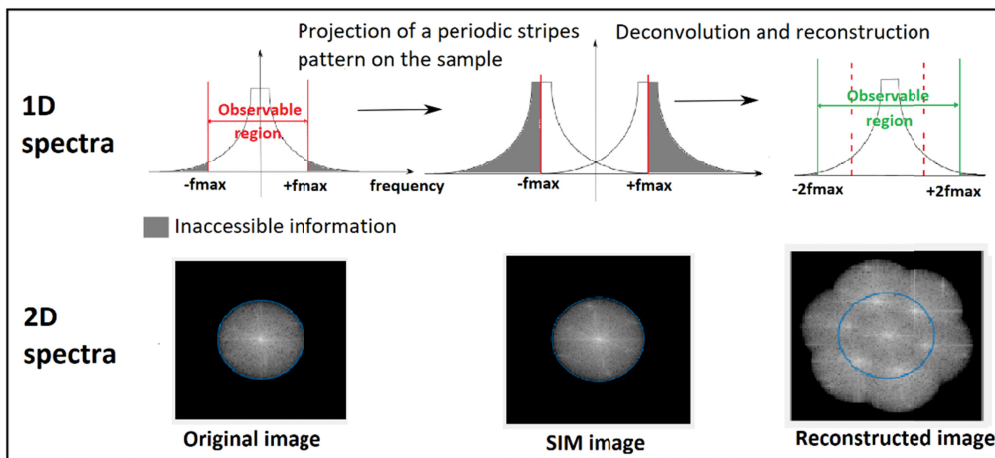


Fig. S1: SIM resolution enhancement, visualized in the Fourier domain. The upper row shows a 1D illustration of the Optical Transfer Function, whereas the lower row plots the magnitude of the Fourier Transform for an illustrative sample. Left: spectra of a widefield image. Middle: spectra of the widefield image illuminated with a striped pattern. Right: spectra of a high-resolution SIM reconstructed image. SIM imaging gives access to an observable region approximately twice as large as that of widefield image (blue circle). Modified from (3).

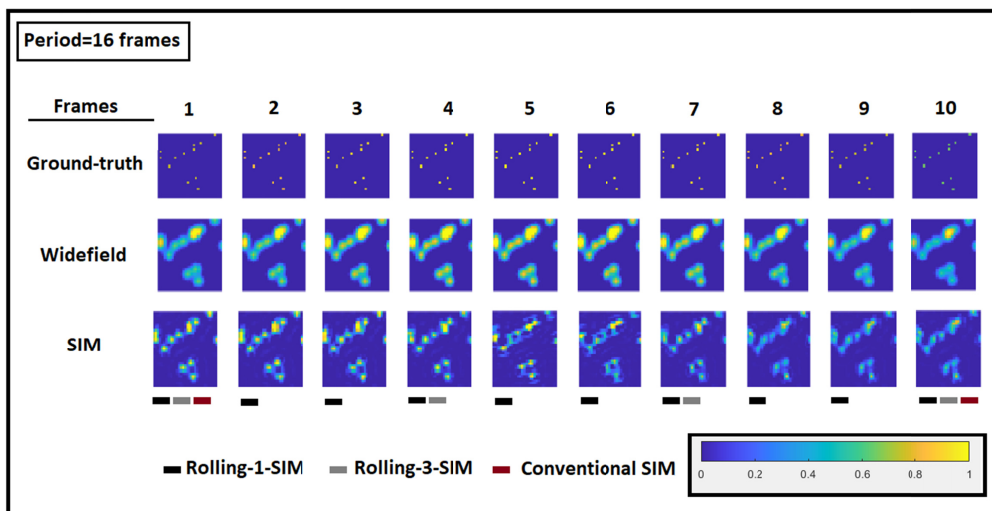


Fig. S2: Illustration of the imaging performance of SIM reconstruction in the presence of pronounced high-temporal-frequency oscillations. In an ideal case, all reconstructed frames would be identical in appearance, because the SIM reconstruction would not be affected by temporal modulation.

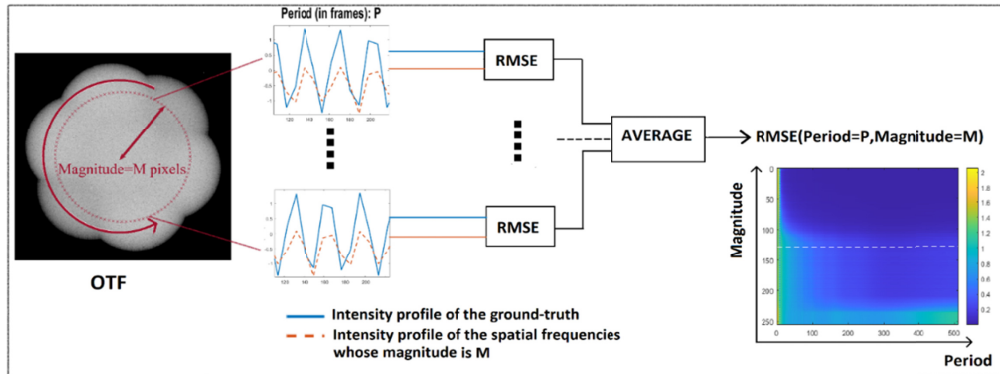


Fig. S3: Calculation of the RMSE metric. RMSE between the ground-truth intensity profile and that of spatial frequencies with the same magnitude M are averaged radially (see the red circular arrow on the OTF) and plotted for different modulation periods P (see right hand side plot)

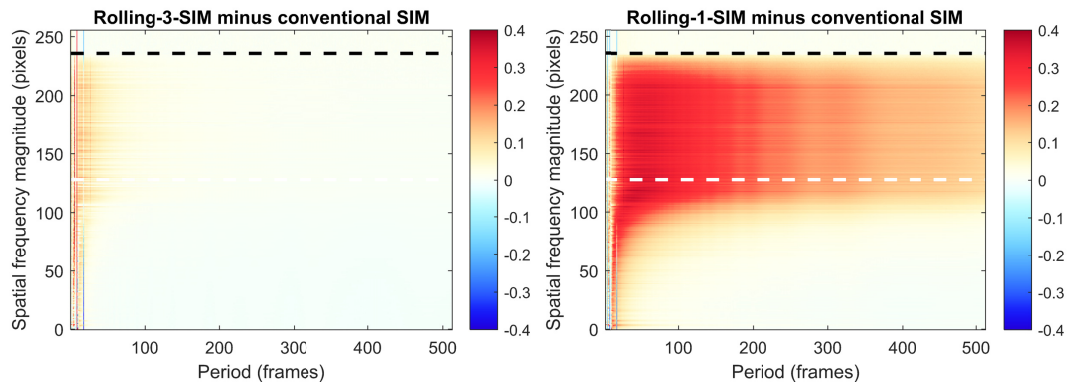


Fig. S4: Difference between the temporal resolution of Rolling-3-SIM and conventional SIM, and of Rolling-1-SIM and conventional SIM, obtained by subtracting the RMSE for conventional SIM from that of Rolling SIM; data displayed with identical colour scales. The white and black horizontal dashed lines highlight the theoretical diffraction limit and the limit of the SIM OTF respectively.