

Making the Invisible Visible

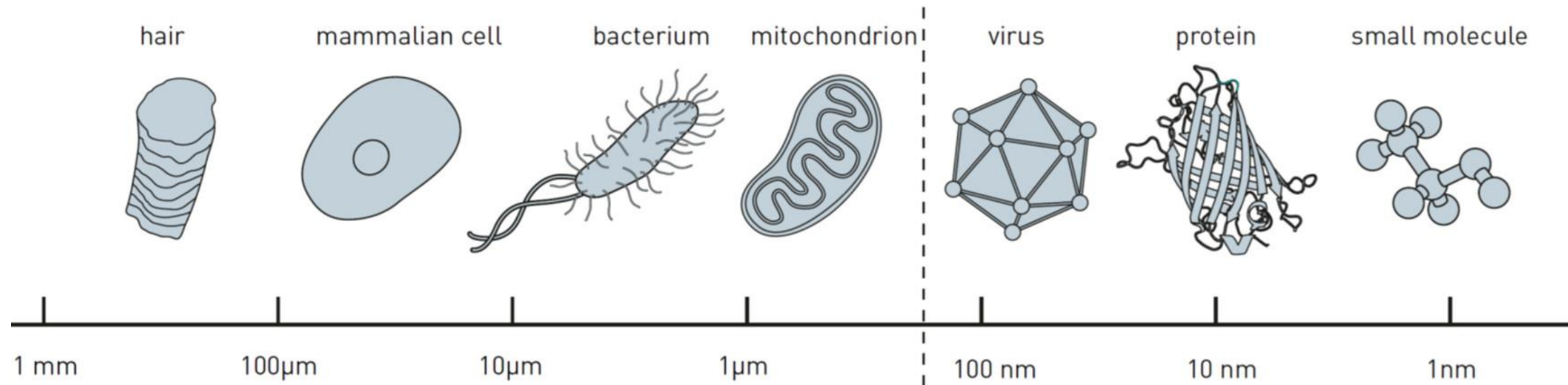
Dr DOMINIC ZERULLA
PEARlabs Technologies Ltd

EPIC Online Technology Meeting on in-vivo Imaging 4 May 2020

PEARlabs is offering the only imaging method globally capable of imaging nanoscale structures at video rates

Resolvable by optical microscopy

Resolvable by nanoscopy



Nobel Prize 2014
Super-Resolution

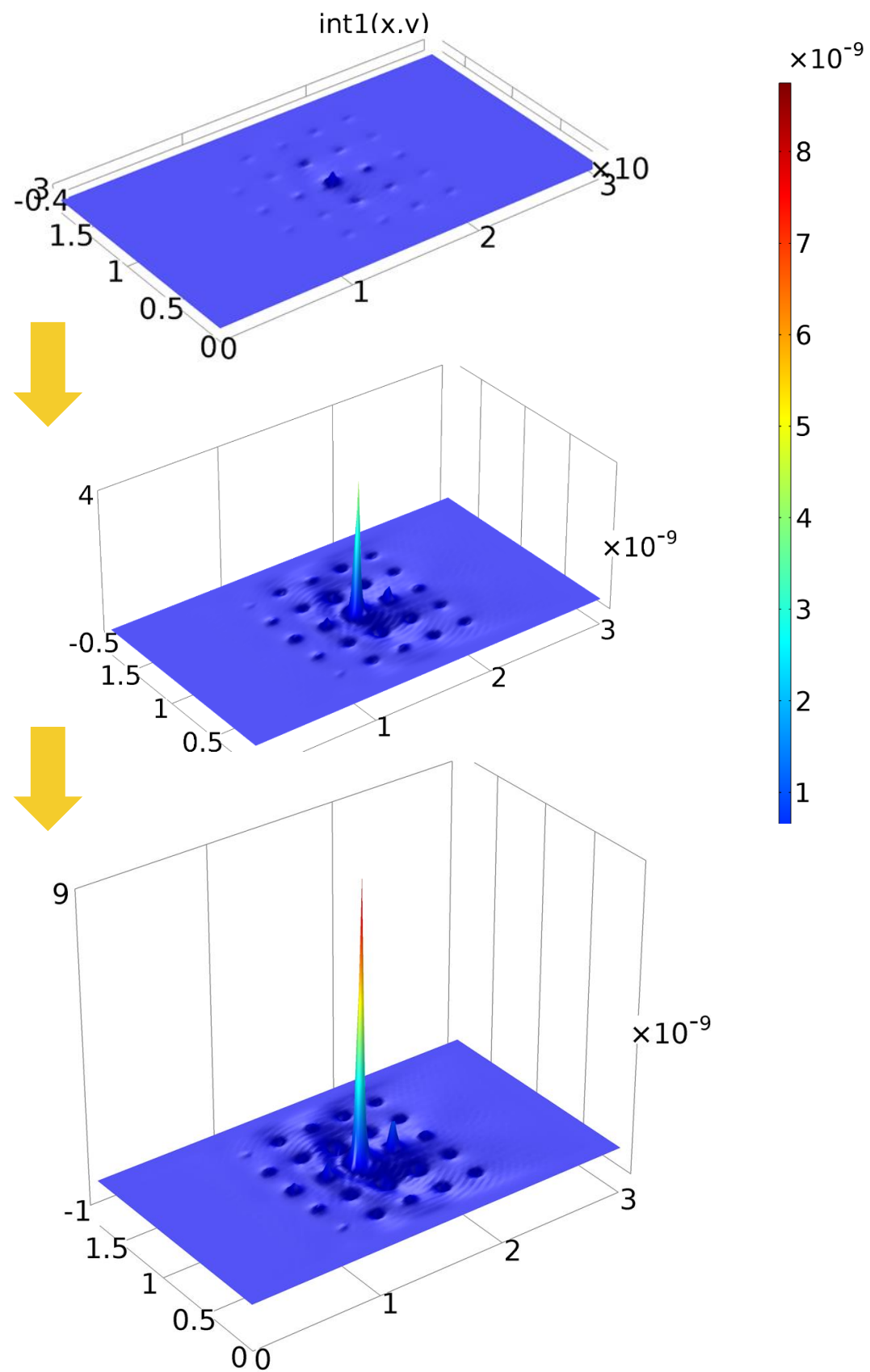


Abbe's Diffraction Limit: 200 nm

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BEYOND THE
DIFFRACTION
LIMIT

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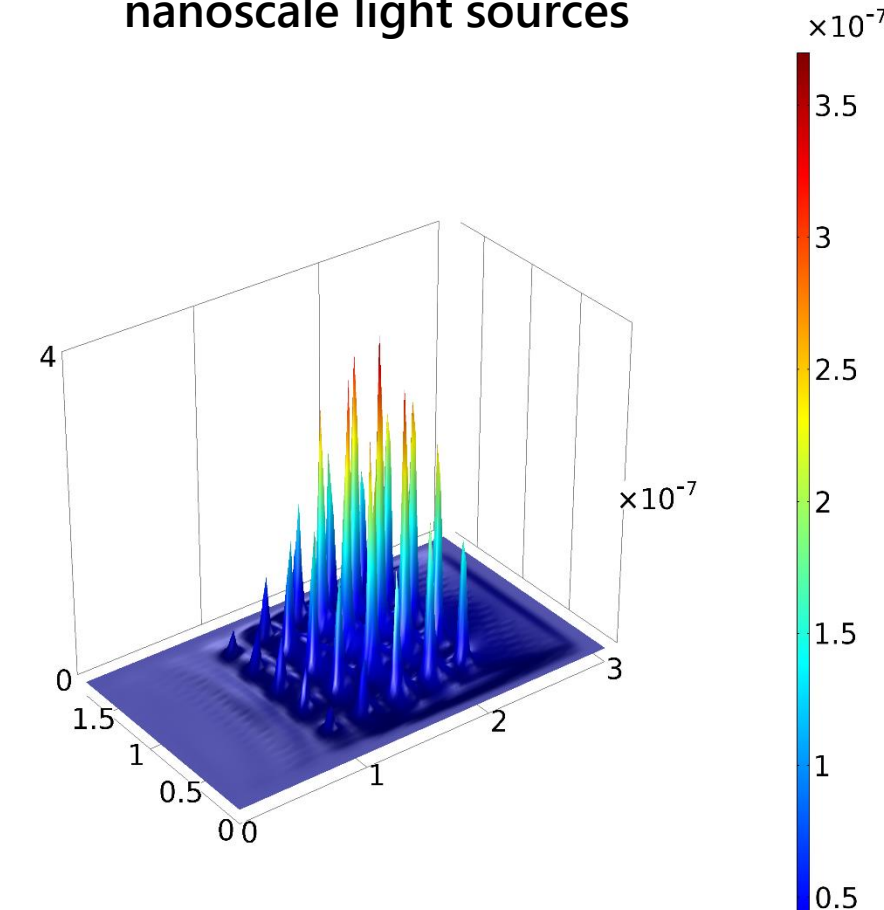
Temporal modulation of a single pixel



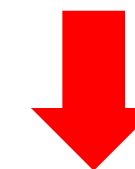
As modulation of pixel can be individually changed:



PEAR Optical Chip consists of individually addressable nanoscale light sources



As light sources can be individually modulated with different frequencies

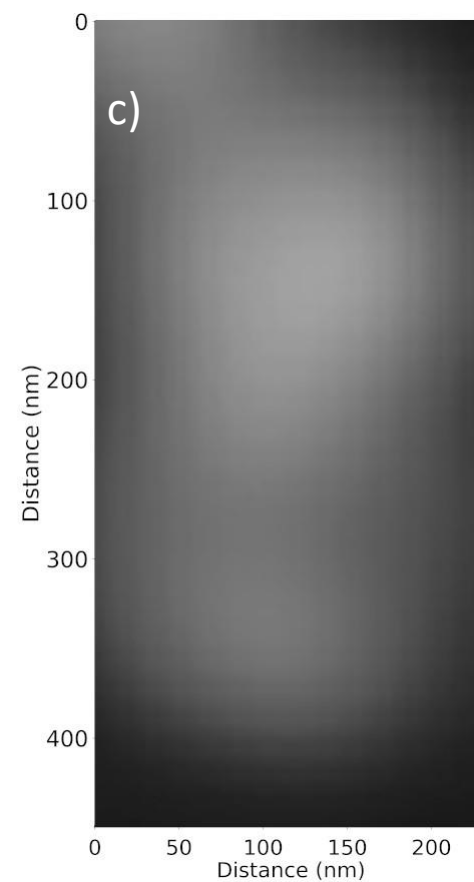
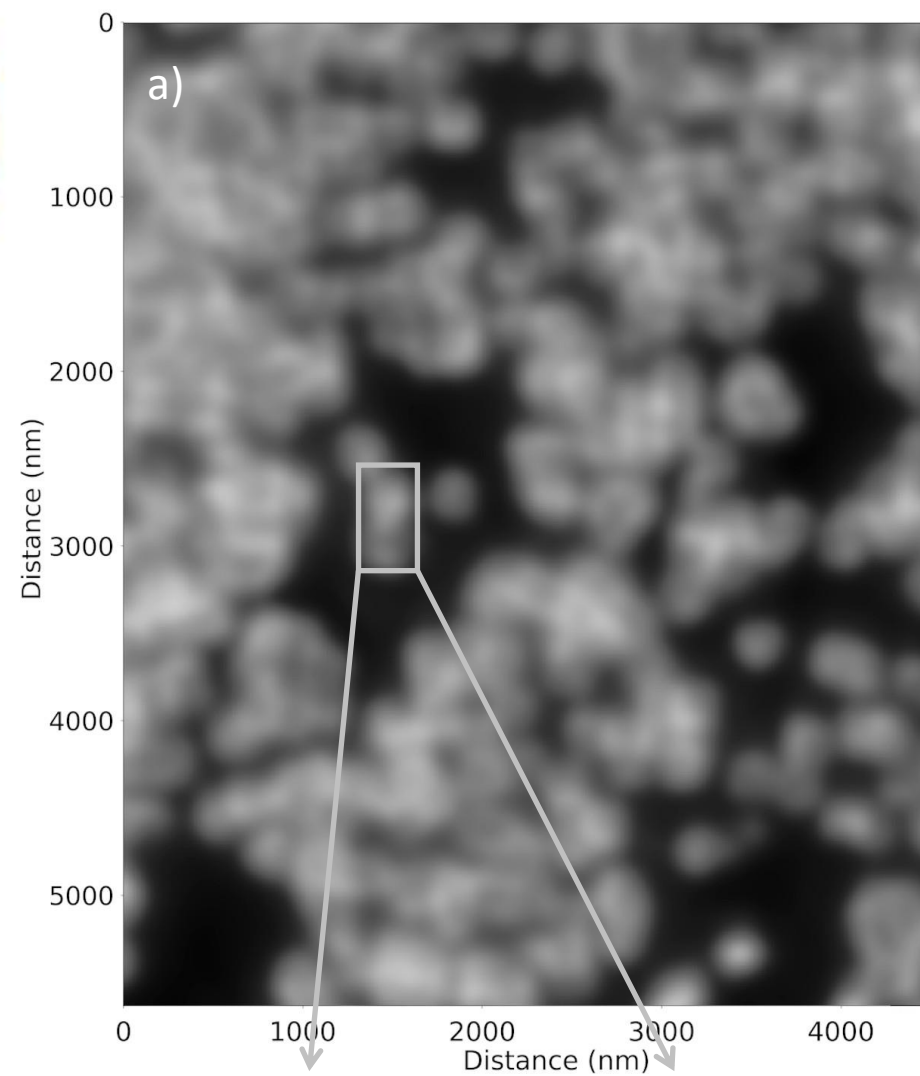


Sub-diffraction limited spatial position can be mapped through heterodyne schemes

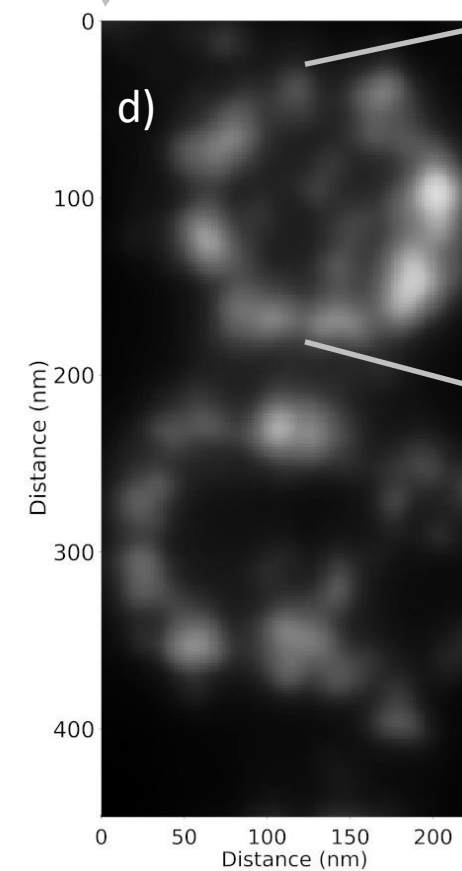
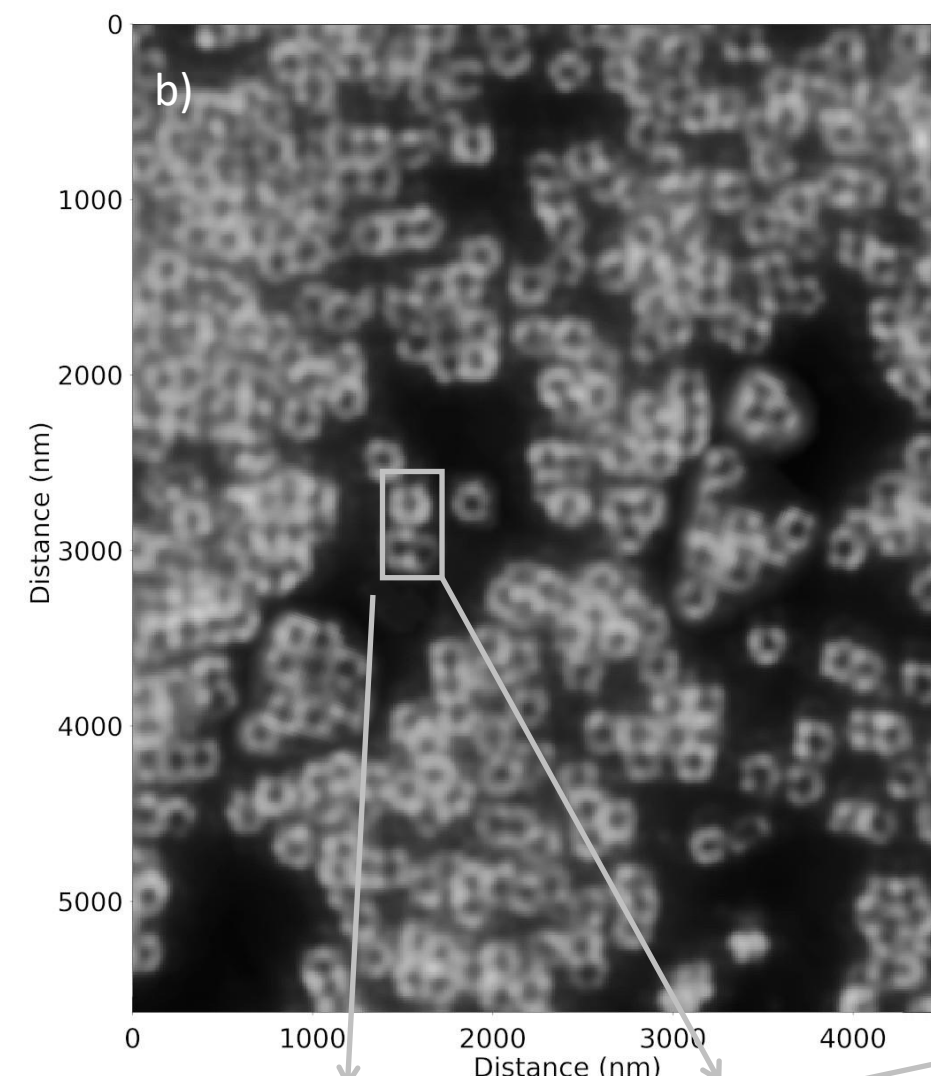
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High Numerical Aperture Microscopy

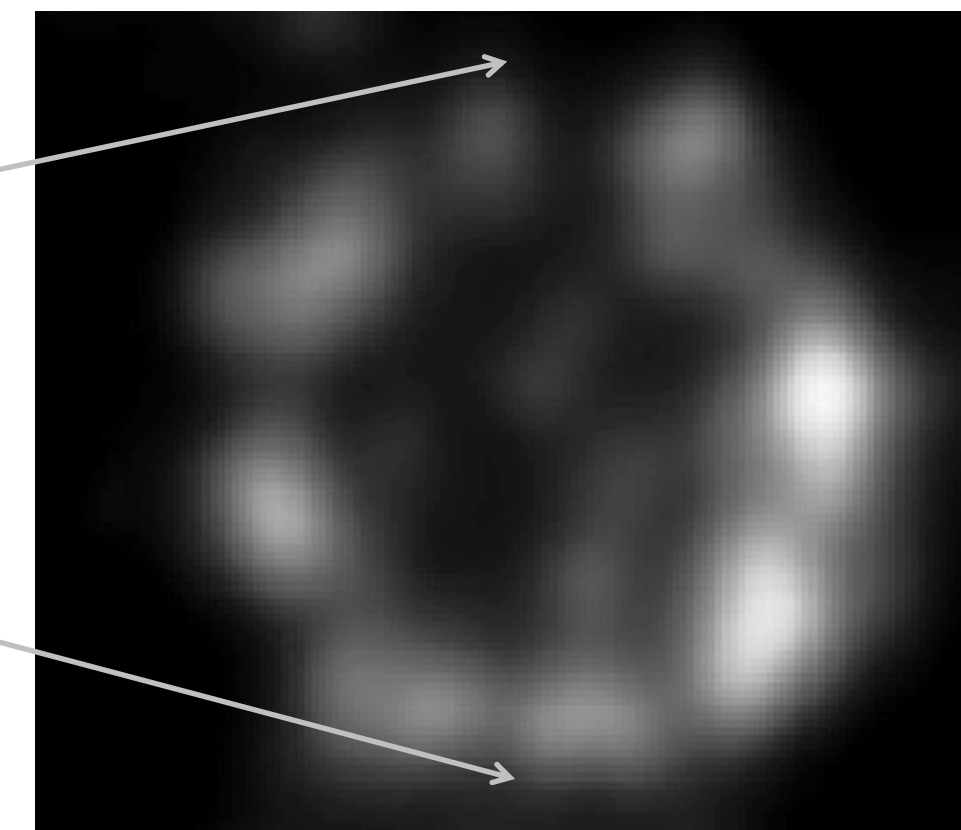


PEAR Super-Resolution



PEAR performance

21 nm spatial resolution



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Summary

- Spatial Resolution < 21 nm
- Real-time imaging
- Deterministic
- Label-free
- Biocompatible

**SFI FUTURE INNOVATOR SPECIAL
PRIZE Winner
2018/2019**

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