

Super-resolved near field and remote sensing

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Digital imaging systems as well as human vision system have limited capability for separation of spatial features. Therefore, the imaging resolution is limited. The reasons to this limitation are related to the effect of diffraction i.e. the finite dimensions of the imaging optics, the geometry of the sensing array and its sensitivity as well as the axial position of the object itself which may be out of focus.

In this talk I will present novel photonic approaches and means to exceed the above mentioned limitations existing in the vision science and eventually to allow us having super resolved imaging providing improved lateral and axial capabilities for separation of spatial features.

I will also show how to use special photonic means for remote sensing of biomedical parameters such as blood pulse pressure, heart beats, glucose concentration, intraocular pressure etc.

The talk will involve not only presentation of special optical hardware but also discussion of various super resolving associated image processing algorithms.