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Compressed sensing in medical applications

Asymptotic structure in compressed sensing

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Abstract: Compressed Sensing (CS), in short, allows accurate recovery from undersampled data. This is a desirable feat in many applications, such as MRI, microscopy, tomography, imaging, interferometry and many others. However, some of the conventional CS concepts such as sparsity and incoherence yield poor results or are unsuitable in a range of practical applications of interest. This talk will explain why then show how a set of new CS concepts, namely asymptotic sparsity, asymptotic incoherence and multilevel sampling, provide a better fit for such practical problems, and how critical phenomena such as resolution dependency can be exploited in practice to achieve substantial benefits. The talk will feature results in the context of MRI and fluorescence microscopy as examples of medical and biomedical imaging.