Elektrotechnik-Elektronik-Informationstechnik

EEI KOLLOQUIUM

Exact Localization of Point Sources via Convex Optimization

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A common problem in signal processing is to recover a sparse signal from linear measurements. Traditional sparse signal recovery and compressive sensing theory focuses on signals that have a sparse representation in discrete and incoherent dictionaries. However, the signals arising in imaging, radar, and localization are typically sparse in continuously indexed dictionaries that are highly coherent. This talk will be about our recently developed results showing that certain convex programs perfectly recover signals that are sparse in a large class of continuously indexed dictionaries. Our results show that the corresponding convex programs yield significant gains in resolution over conventional methods---often overcoming apparent resolution limits imposed by physical constraints such as limited bandwidth and observation time in Radar. Moreover, those methods are very broadly applicable, including where conventional super-resolution methods are not applicable.