

# Shape Reconstruction Algorithms based on BCS

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## Abstract

Le tecniche di "Compressive Sampling" (CS), recentemente sviluppate nell'ambito dell'elaborazione digitale dei segnali, si occupano di permettere la ricostruzione affidabile di segnali (ad esempio, immagini) ad alta risoluzione con un numero di misure del fenomeno di interesse molto inferiore rispetto ai requisiti dati dal teorema del campionamento di Nyquist. Tali tecniche combinano due idee fondamentali: (a) la disponibilità di una rappresentazione "compatta" (compressive) del fenomeno di interesse e (b) un campionamento incoerente (ad esempio pseudorandom) del segnale al fine di estrarre la massima quantità di informazioni utilizzando un numero minimo di misure. Le tecniche di CS sono già state applicate con successo a numerosi problemi pratici in ambito radar, compressione delle immagini e della voce, e compressione video.

Obiettivo del progetto è estendere l'utilizzo di tali tecniche ai problemi di imaging a microonde. In particolare, l'attività si occuperà di valutare un codice per l'inversione a microonde basata sul Bayesian Compressive Sampling per la ricostruzione di oggetti metallici (PEC) di dimensioni molto contenute.

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