Space-Doppler Processing for Multichannel ISAR Imaging of Non-Cooperative Targets Embedded in Strong Clutter

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Overview

Problem

- Moving targets appear defocused within SAR images
- Detection is a critical step especially in the case of ground targets

Proposed solution

- **ISAR processing** is a powerful tool used to obtain well focused images of moving targets detected within SAR images
- A **Space Doppler Adaptive Processing** is proposed to suppress strong clutter and it has been integrated with ISAR processing to obtain high resolution images of non-cooperative targets
- A **sub-optimum approach** is derived to overcome computational and statistical issues in the estimation of the **cross-power spectral matrix**
Results

Optimum Approach

No-clutter suppression

Sub-Optimum Approach

Clutter suppressed before ISAR

Clutter suppressed after ISAR

Clutter suppressed after ISAR – L=100

Clutter suppressed after ISAR – L=20

Clutter suppressed after ISAR – L=10