MOTION COMPENSATION FOR
AIRBORNE SYNTHETIC APERTURE RADAR (ASAR)

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ABSTRACT

Presently the ASAR system is being flown in fixed antenna configuration. Consequently in the Robust SAR processor, developed in SAC, complete motion compensation is implemented in the processor itself. Motion is estimated by slaving INS information with GPS information. Two types of motion errors are compensated in the processor namely: rotational and translational. Of the rotational errors, roll errors which create varying elevation illumination over the swath is compensated from raw data statistics. Pitch and yaw errors combined are corrected using Doppler centroid information. Translational motion correction is implemented by a software based PRF/V slaving, phase compensation and window tuning. Phase compensation and window tuning are implemented in two step process: once at raw data level prior to azimuth compression and another at the post processing stage after azimuth compression. Geometric correction is in-built in the azimuth processing stage in order to enable precise mosaicing of block processed sub_images.