

R07a **A Method for Reconstruction of Masked Pixels: Application in CO Multi-line Imaging of Nearby Galaxies (COMING)**

Suchetha Cooray (Nagoya University), Tsutomu T. Takeuchi (Nagoya University), Moe Yoda (Nagoya University), Kazuo Sorai (Hokkaido University)

We present a framework for recovering parts of astronomical images where some pixels are lacking in information. The procedure, which is an iterative algorithm that involves Fourier and inverse transforms, extrapolates the masked pixels (to be restored) using the available information together with a prior. We have employed the methodology in CO Multi-line Imaging of Nearby Galaxies (COMING) Project (Sorai et al. 2019) that uses the 45m telescope at Nobeyama Radio Observatory (NRO) to map gas structures in the nearby galaxies. Some observations of the standard calibration source contained artifacts in the image due to a detector error that had to be masked and reconstructed. With the prior of the structures in the image being smooth, reconstructed calibration source images were used for calibrating 11 out of the total 147 observed galaxy data in the project. The extrapolation technique show more promise than interpolation methods and can have many astronomical applications in solving the masking problem.