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DECONV_TOOL: an IDL based Deconvolution Software Package

F. Városi, W. B. Landsman (Hughes STX Corp.)

There are a variety of algorithms for deconvolution of blurred images, each having its own criteria or statistic to be optimized in order to estimate the original image data. Using the Interactive Data Language (IDL), we have implemented the Maximum Likelihood, Maximum Entropy, Maximum Residual Likelihood, and σ -CLEAN algorithms in a unified environment called DeConv-Tool. Most of the algorithms have as their goal the optimization of statistics such as standard deviation and mean of residuals, Shannon entropy, log-likelihood, chi-square of the residual auto-correlation. These statistics are computed by DeConv-Tool for the purpose of determining the performance and convergence of any particular method and comparisons between methods. DeConv-Tool allows interactive monitoring of the statistics and the deconvolved image during computation. The final results, and optionally, the intermediate results, are stored in a structure convenient for comparison between methods and review of the deconvolution computation. The routines comprising DeConv-Tool are available via anonymous FTP through the IDL Astronomy User's Library.