VISUAL DOUBLE STARS IMAGE RESTORATION WITH BLIND DECONVOLUTION “SEDDARA” (SELF DECONVOLVING DATA RECONSTRUCTION ALGORITHM) METHOD  
(Case Study at Bosscha Observatory ITB)

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Abstract  
Observation of celestial objects by astronomers in Bosscha Observatory ITB has the purpose to obtain high-resolution image. The turbulence in the atmosphere causes additional optical observation instruments needed to reduce the distortion caused by atmospheric effects, namely adaptive optics-7, but the optical effects and motion blur on the use of these instruments produce images with high-value opaqueness. Image restoration techniques using blind deconvolution method SeDDaRA can be used to improve the image of the observation with an unknown condition and value of the original image PSF from the original image. In this method by performing the extraction of image observations to obtain the PSF was then used in the deconvolution process to obtain image restoration. In this study using a visual double star objects SAO204039 with separation 6.4 arc seconds and then restored using a blind deconvolution method with step SeDDaRA give tunning parameter variation value, α, from 0 to 1 to get the image of the approaching restoration of original image. Research carried out by using the observed image with exposure time of 5 seconds and 10 seconds and by calculating the value of MSE of image restoration from the results, so the MSE value of 1,51529 % and a value of 0.1 for the observed image with exposure time of 5 seconds while in image observation with exposure time of 10 seconds to obtain the MSE of 1,365316 % and α value of 0.15. Differences in α values obtained due to differences in the extraction of value from the observed image which is used to get the best bandwidth smoothing filter to obtain the value of PSF and PSF value was then used for deconvolution of the observed image.

Keywords : Visual double stars, SeDDaRA, Image restoration
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