WIFIS Simulation of Spiral Galaxy Observations

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Abstract

The beginings of simulating spiral galaxy, with focus on morphology, flux and emission lines in particular

To start with I took the line emission fluxes from "A spectral atlas of H II galaxies in the near-infrared" (Martins)*. I used the values for NGC 2903 using the "N2" apperture (see table 4 of the Martins paper), this galaxy's morphology is SAB(rs)bc.

To create the spatial image using galfit I looked through a paper published about galfit†, which in table 5 gives the galfit parameters used to model NCG 289 which is also a SAB(rs)bc galaxy. The image they are fitting comes from the Carnegie-Irvine Galaxy Survey (CGS) and as far as I can tell from visual inspection the particular image is a colour composite image of B, V, R, I band images‡.

Since we are simulating images in the Near infrared I looked for papers that had morphological fits to similar galaxies in the Near-IR (J or H band particularly) I also wanted the J-band magnitude out to one effective radius. I was able to find papers that had the information I wanted for NGC 289 in particular. The next few paragraphs will outline what I did and the sources I used in the end.

I found the J-band flux in the paper "Dark and Baryonic Matter in Bright Spiral galaxies" (2005) Kassin§

*http://mnras.oxfordjournals.org/content/suppl/2013/03/11/stt296.DC1

†http://iopscience.iop.org/1538-3881/139/6/2097/pdf/aj_139_6_2097.pdf

‡http://cgs.obs.carnegiescience.edu/CGS/object_html_pages/NGC289.html

§http://iopscience.iop.org/0067-0049/162/1/80/fulltext/63054.text.html