# NGC 613: NUCLEAR REGION NARROW BAND IMAGERY

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The peculiar nuclear region (Hummel et al., 1987) of the southern barred spiral NGC613 has been imaged with a CCD attached to the 90 cm CTIO reflector and integration time of one hour, using narrow band filters at $H_\alpha$, $H_\beta$, [OIII], [OII] and continua at 3765 Å(C[OII]), 5200 Å($CH_\beta$) and 6476 Å($CH_\alpha$), which allow to obtain pure line frames. Stone and Baldwin (1983) spectrophotometric standards have been observed for absolute calibration. The $CH_\alpha$ (fig. 1) and $CH_\beta$ (fig. 2) images show the well known 2 blobs structure, the SE of which is the nucleus. The ratio of both frames reveals an up to now unknown ring like structure (fig. 8) of 1400 x 2300 pc. The monochromatic color c($CH_\beta$-$CH_\alpha$) reach 0.6 mag on the ring and 0.0 to 0.2 mag in its inner zone, where most of the gas emission is produced. The ratio $H_\alpha/H_\beta$ (fig. 7) shows that the ring is practically absorption free, and that the dust is strongly concentrated in a zone of 400 pc , shifted 500 pc to the N of the nucleus, absorving up to 6 mag. in $H_\beta$. Comparison with star monochromatic colors (O'Connell, 1973) lead to conclude that the ring colour is produced by red stars, with a mean spectral type G8 to K1, while in the central region it is A5 to F0. This ring is probably similar to that of HII regions observed in NGC 1097 (Osmer et al. 1974), but with the ionizing stars having evolved to RSG. The $H_\alpha$ pattern (fig. 3) presents only one maximum, displaced about 300 pc to the SE of the nucleus, being the weakest isophotes distorted to the W. The $H_\beta$ one (fig. 4) shows also one maximum, but the isodensities are elongated due to the extinction. The [OII] (fig. 6) shows a two blob like structure; and the [OIII], with the richest feature distribution, shows emission minima coincident with the [OII] blobs. The mean $H_\alpha/H_\beta$ ratio is about 3.9, but mean extinction correction can be meaningless due to the distribution of dust. The ratios [OIII]/$H_\beta$ = 0.47 and [OII]/$H_\beta$ = 0.27, when compared with Stasińska's (1982) photoionization models, indicate higher than solar metallicity and Teff $\approx 40,000$K for the ionizing source.

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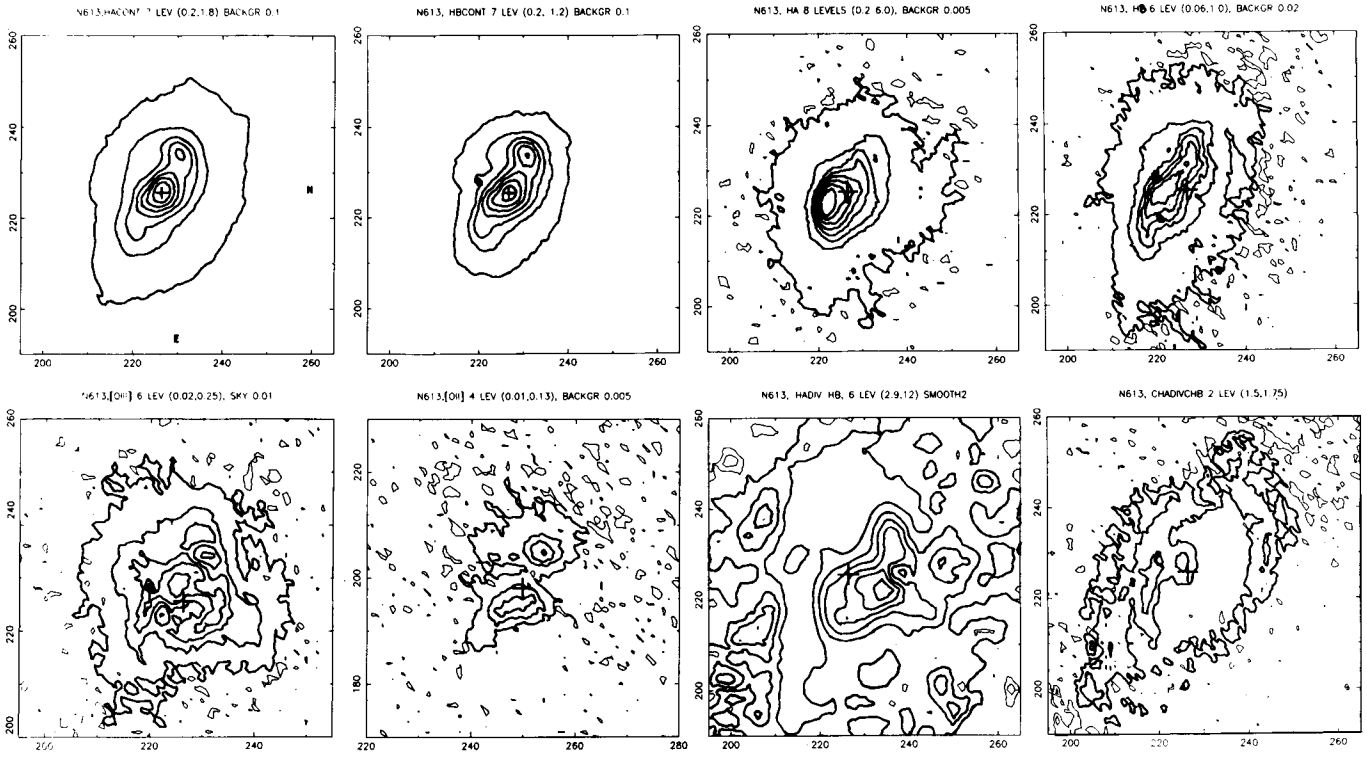


All figures have the same orientation. Coordinates are in pixels (1pxl=0.498 arc sec). The position of the $CH_\alpha$ nucleus is shown by a cross in all pictures. For a mean reddening $H_\alpha/H_\beta$ = 3.9 and a distance modulus of 19.2. The corrected log L (erg/sec/Å), within a diaphragn of 15 arc sec, for $H_\alpha$, $H_\beta$, [OIII]5007 and [OII]3727 is 40.28, 40.12, 39.58, and 39.50 respectively (for 30 Dor Log L = 39.48)