OPTICAL IMAGERY OF NGC6302

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Images with narrow band filters centred at the most significant emission lines, such as Hβ, Hα, [SII] 6717 and [SII] 6731, were taken to explore the physical conditions of NGC 6302. Observations were secured on May 1991 with the 2.0m telescope of the Observatorio Astronómico Nacional at San Pedro Mártir, B.C., Mexico, the f/7.5 secondary, and a 384×576 CCD chip. The most significant results are:

1. Excitation mechanism. The image of the Hα/[SII] lines ratio reveals that photoionization and shocks are equally important throughout most of the object. Photoionization is dominant in the central region and a few isolated patches. Elongated structures pointing towards the central region can be identified with a shock impinging the wall of a bipolar cavity.
2. Extinction. The image of the Hα/Hβ lines ratio shows that extinction changes over all distance scales. C(Hβ) is nearly equal to 1.7 in the central region. It falls off very rapidly away from it, and at a distance of 10 arcsec it is approximately equal to 1.3. In the mean, Hα/Hβ is 1.25 times larger in the western lobe than in the eastern.
3. Excitation. Different lines ratios, such as [SII] 6724/[SIII] 9069, [OIII] 5007/[OI] 6300 and HeI 5876/Hβ, indicate that excitation is larger in the eastern lobe. For instance, HeI 5876/H$\beta \simeq 0.15$ in the eastern lobe and $\simeq 0.13$ in the western region.
4. Electron density was calculated from the [SII] 6717 and [SII] 6731 images. The density structure is very complex. Within the central region the highest density is found at both sides of the dark lane. No clear correlation exists between density and shock excited regions. Wave–like patterns can be recognized in the density image. These can be attributed to instabilities, sporadic ejections events and/or multiple shocks.

In conclusion, physical parameters change over all distance scales. This should be acknowledged when calculating chemical abundances.

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