COLLIMATED OUTFLOW FROM STARS: THE PLANETARY NEBULA ABELL 78

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The planetary nebula Abell 78 is slightly oval in an Hα image taken with a focal reducer attached to the 2.1–m telescope of San Pedro Mártir Observatory. Jacoby (1979) noted that the morphology of this PN in the [O III] λ5007 line is quite different from that shown on the POSS red plates.

The velocity points in the Hα line can be clearly divided into positive and negative sections around a line passing through the central star in the direction of the minor axis. This velocity structure has suggested a model for the formation of the nebular images as follows: matter is ejected from a spot at a latitude of 8° from a rotating massive progenitor. The two roundish images that one observes as an oval image in the Hα figure are inclined to the line of sight causing the slight difference in the velocity of the planetary.

Later ejections coming from deeper layers of the star are mostly composed of heavy elements.

Epilogue

Most of the structure in velocity-field and morphology of ejected matter from stars can be explained by assuming that it is not from spherical outflows, but ejections from specific areas of the surface of the star.

Reference

Jacoby, G. H. 1979, *PASP*, 91, 754

R.F. Wing (ed.), The Carbon Star Phenomenon, 245.