

# Photometric properties of the central region of the seahorse galaxy NGC 7479

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**Abstract.** High resolution  $B, V, I$  imaging of the inner region of the spiral barred galaxy NGC 7479 suggests this galaxy contains a pseudo nuclear ring and possibly a nuclear bar.

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## 1. Introduction

The spiral galaxy NGC 7479 has a strange morphology, marked by the unusually strong bar and the two bright asymmetric arms, that together form the amazing seahorse shape. Deep exposures of the disk reveal a small but well defined tail with regions of star formation. These structures are recognized signatures of interaction but, in the absence of companions, the most plausible explanation seems to be the suggested cannibalization of a small galaxy that would by now be near the nucleus. All these features are usually associated with nuclear activity, but this seems to be the only aspect in which NGC 7479 is moderate: its nucleus is classified as a mere LINER. Despite the vast number of studies made on this object, it seems there is still much to learn about it. Here we present new results from  $B, V, I$  surface photometry of the central 2000 pc of this galaxy, based on data from the 2.2m telescope of Mauna Kea. The spacial scale of the images is  $1 \text{ pix} = 0.139'' = 21.5 \text{ pc}$  at the distance of 32 Mpc.

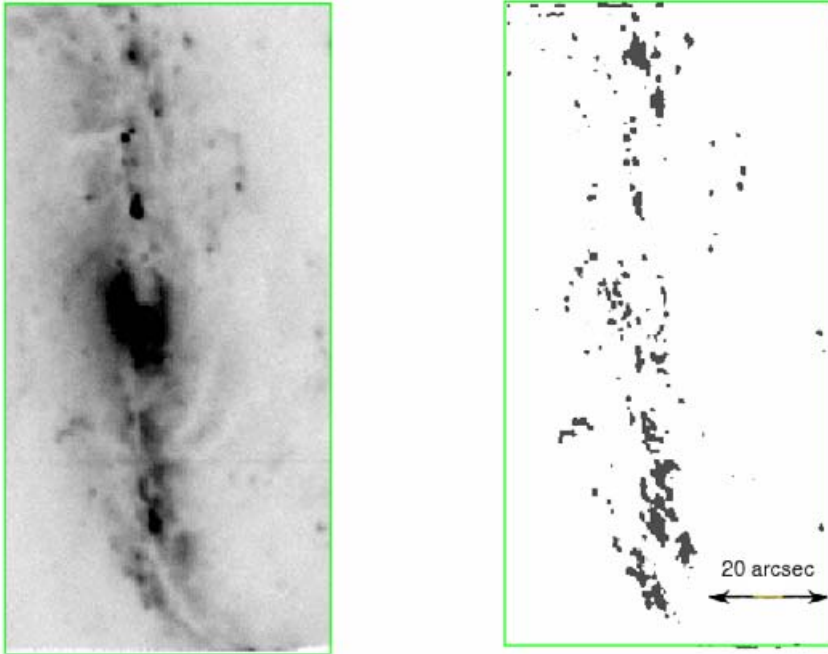
## 2. Results and discussion

The  $B - I$  map shown in figure 1 reveals a central ring crossed by the main bar dust lanes, with radius of  $8.5''$  (1317 pc), considered normal for nuclear rings (Knapen 2003). It is centered nearly  $3''$  northeast of the  $B$ -band center, and has bluer color than the surrounding regions, which suggests it is composed by regions of star formation.

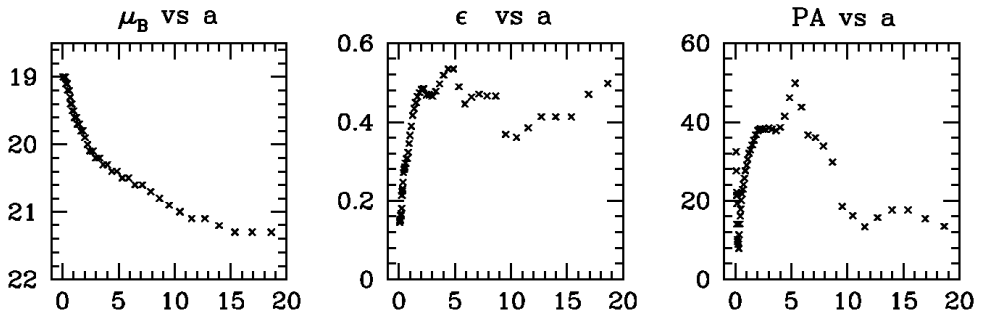
Some parameters obtained from isophotal analysis are shown in figure 2. The surface brightness profile is nearly exponential (Sersic's parameters  $n = 1.1$ ) in the region  $1'' < r < 5''$ , and shows a tenuous shoulder at  $5'' < r < 9''$ , at the position of the ring. The ellipticity and position angle profiles both increase strongly from the center to  $r \simeq 6''$ , decreasing after that, which indicates the presence of an elongated structure with twisted isophotes. A similar diagram was obtained by Seiger et al. (2002) with HST/NICMOS data, and Friedli et al. (1996) had already mentioned these central twisted isophotes, based on  $JHK$  data. The twist might be an effect of absorption by dust, but another possibility is that in the nuclear region of NGC 7479 there is a small triaxial bar.

## Acknowledgements

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**Figure 1.** B (left) and B-I (right) images of the bar of NGC 7479, obtained after deconvolution with Gaussian PSFs (FWHM = 1'' and 1.5'' for B and I respectively) using the LUCY task in IRAF.STSDAS. The orientation is North up, East left. The size is 55.74 × 10.23 arcmin<sup>2</sup>.



**Figure 2.** Surface brightness (top), ellipticity (middle) and position angle (bottom) profiles as a function of the semimajor axis, in arcsec, in the inner region of NGC 7479. The surface brightness scale is not absolute.

## References

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