

NIR IMAGING OF THE BOX/PEANUT BULGE IN NGC 4302

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Abstract. The central, spheroidal component of spiral galaxies is frequently found to be “box- or peanut” (b/p) shaped. More than 30% of edge-on galaxies may show this phenomenon (Dettmar 1995). To explain this large frequency a very common process for the origin of this specific shape is required. N-body simulations have shown that this can be attributed to instabilities and resonances caused by bars in spiral disks (e. g., Combes et al. 1990, Raha et al. 1991).

Previous statistics (Jarvis 1986, Shaw 1987, de Souza & dos Anjos 1987) are hampered by the low dynamic range of the photographic material used as well as by dust absorption in late type spirals and the difficulty to disentangle disk and bulge in such systems. We present K-band imaging of the very dusty edge-on galaxy NGC 4302 in the Virgo cluster supporting the presence of b/p bulges in late type spirals.

NIR Observations were obtained with the NICMOS-3 ARNICA camera at TIRGO¹ in spring 1994. The combined image of NGC 4302 clearly shows a flat-top “boxy” structure of the spheroid and an additional very thin component appears on the major axis cut. This latter component could be identified with a bar. The example of NGC 4302 demonstrates that b/p bulges are indeed present in disks of late type spirals and that bars can account for a significant fraction of these structures. As a consequence, the bulge/disk ratio of late type spirals has to be interpreted in an evolutionary scenario rather than as a primordial property.

References

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