

The Extended Bar and Grand-Design Spirals in NGC 5248

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We present a study of the grand-design spiral galaxy NGC 5248 (Jogee et al. 2002a,b) based on a combination of multi-wavelength observations and hydrodynamical modeling. A deep *R*-band image reveals that what was previously thought to be an inclined disk is in fact an extended bar, embedded within a fainter, more circular, outer disk. NGC 5248 thus provides a classic demonstration of how an extended large-scale stellar bar embedded within a faint outer disk can be missed in imaging studies which lack the sensitivity to detect the outer disk. This effect may well lead high redshift studies to underestimate the fraction of barred galaxies. While bright grand-design spiral arms often stem from the end of a stellar bar, NGC 5248 illustrates that such arms can also result from the gas response and star formation induced on the leading edge of an extended, moderately strong stellar bar. NGC 5248 shows spectacular dust, gas, and stellar grand-design spiral arms which exist on scales of tens of parsecs to tens of kiloparsecs, and connect to a kiloparsec-size starburst ring of bright super star clusters. We illustrate how coupled dynamical mechanisms generate such continuous spiral structures deep inside a barred potential, drive disk evolution, and fuel star formation on progressively smaller scales.

References

- Jogee, S., Knapen, J. H., Laine, S., Shlosman, I., Scoville, N. Z., 2002a, ApJL, submitted
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