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New draft of "Hubble Sequence" paper

Keel, William <keel@ua.edu> Fri, Jun 8, 2018 at 6:31 AM
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A few comments on the Hubble-classification draft -

In the “as a reminder” paragraph, maybe describe the tines of the tuning fork as branches rather than arms to avoid mental confusion?

Fig 1 - Names of ETGs and their types don’t match between figure and caption. Spirals and NGC 6278 are OK. It almost hurts that the
galaxies have to be so small; at least when printed, important detail vanishes. (But following Hubble’s layout, it is what it is - could
that be set up in landscape direction on the page?).

p.3 paragraph “In this article” - a couple of citation parentheses issues. Also in last senesce, editor may ask for “whether” instead of “if”.

3 paragraphs later “an ETG” from "a ETG".

3.1 - so i~90 should be taken to mean 80-90 degrees as in the footnote?

eqn 4 - I am surprised that this implies the correlation with bulge luminosity is better than than with bulge/total luminosity or even bulge/disk.
I would have naively expected bulge prominence to trace a relative quantity better.

Staring at Fig 5 - is there an extent to which, taking out the huge change in number of galaxies along the B axis, there
is a weak trend in the classical direction, such that the peak in a vertical slice of the data moves from w~0.75 at B=0.3 to
w~0.85 at B=0.6? This is still tiny difference in w, which was discussed at the Rings meeting - it’s funny that the mean winding
angle along the Hubble sequence from the GZ-SPARCFIRE results spans such a small range when, for example, Rob Kennicutt’s
1981 measures for individual bright galaxies span a much wider range. Part of the answer is surely that his objects sample the scatter
at each type, and the systematics of mean properties are the main point of this paper.
And should the classical one really have slope 1, as implied by the caption?
[Colin Hancock’s poster attracted a group of people all nodding sagely at ways an image can lead SPARCFIRE astray - I think the
Arkansas group is producing more robust ways to derive the pitch able, but it still looks very people-intensive).

Summary: of course it is not just these results, but it’s worth remarking how much our view of spiral arms now has changed from the
70s and 80s. The data and models have pretty much dragged us to seeing everything but grand-design density-wave patterns

as transient and therefore re-forming constantly as they wind up. Earlier, it was almost an article of faith that the ubiquity of spiral patterns
meant they had to be long-lasting. (In part this has come from more sophisticated simulations, and I think on part from finding how few
galaxies show the proper signatures for density waves with constant angular pattern speed). I don't see it said this way, but
a major reason to think the spiral arm patterns change is that it's much easier to see physical processes for arm winding than
changes in the prominence of the bulge over dynamical times.

Fundamental stuff!

Bill

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