

COLOUR (\approx AGE?) GRADIENTS IN SPIRAL GALAXIES

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A sample of 86 galaxies was imaged in the *B*, *V*, *R*, *I*, *H* and *K* passbands to study their light and colour distribution as function of radius (de Jong & van der Kruit 1994). The radial colour gradients were compared with new dust models, which included both absorption and scattering, and with the stellar population synthesis models of Bruzual & Charlot (1993) and Worthey (1994). By requiring that the models had to fit all six passband photometry at the same time, the relative effects of dust, stellar age and stellar metallicity could be separated (de Jong 1995a, 1995b). The main results from this investigation are:

- All galaxies become bluer with increasing radius. The colour at each radius correlates strongly with the average surface brightness at that radius, with Hubble type being an additional effect. Late type galaxies are bluer at the same surface brightness than early type galaxies.
- The reddening profiles predicted by the dust models are incompatible with the data when all colours have to be fitted at the same time. Dust cannot be the major cause of the colour gradients.
- The population synthesis models by Worthey (1994) indicate that the colour gradients cannot be caused by metallicity gradients alone.
- The best fit to the data is reached in a model where the colour gradients are mainly caused by an age gradient across the disk, with an additional metallicity gradient to explain the very red central colours. The colours of galaxies of type later than Sc indicate that they have in general a lower metallicity at all radii than the earlier types.

References

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