NEAR-IR IMAGING OF ELLIPTICAL GALAXIES

M.A. PAHRE, S. DJORGOVSKI, K. MATTHEWS, D. SHUPE AND R. DE CARVALHO
Palomar Observatory, California Institute of Technology

AND

J.R. MOULD
Mt. Stromlo Observatory, Australia National University

We have imaged more than thirty early-type galaxies in the K-band to investigate their stellar populations. Our surface brightness fluctuations (SBF) measurements for the nearest 14 galaxies produce a mean fluctuations magnitude in the K-band of $\overline{M}_{\rm K} = -5.8 \pm 0.2$ mag. The scatter in the Virgo cluster is small at 0.18 mag, which implies that infrared SBF is potentially a good distance indicator (Pahre & Mould 1994). Inspection of the simple stellar population tracks of Worthey (1994) suggests that a plot of the fluctuation color $(\overline{I} - \overline{K})$ against broadband color $(V - I)$ might be useful in discriminating between age and metallicity effects in elliptical galaxies. We have measured $(r - K)$ color gradients for the entire sample utilizing three methods, two of them independent of sky-subtraction errors, as found in Sparks & Jørgensen (1993). Our color gradients are consistent with a mean metallicity gradient of 0.14 mag dex^{-1}, which is somewhat smaller than that implied by optical color and line gradients alone, suggesting that age gradients may also be important. Finally, we have constructed an infrared Fundamental Plane (FP) which is consistent with its optical counterpart; continued work will determine if there is a significant change in the tilt of the FP between the optical and infrared.

MAP acknowledges a AAS travel grant for this meeting, and SGD acknowledges NSF PYI award AST-9157412.

References

Pahre, M.A., & Mould, J.R. (1994) *Ap. J.*, in press
Sparks, W.B., & Jørgensen, I. (1993), *A.J.*, **105**, 1753
Worthey, G. (1994), preprint