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mediate measurement (four cycles) and remained stable. High spatial frequency errors remained almost perfectly stable.

The conclusion is that in visible light ( $\lambda=500$  nm) the stability of both mirrors towards ageing cycles is of the order of  $\lambda/25$  for the overall rms surface errors and  $\lambda/70$  for the high spatial frequency rms surface errors, a very positive result. Moreover, the changes occur during the first cycles and the surfaces remain almost perfectly stable afterwards. A question still open is the homogeneity of the coefficient of thermal expansion (CTE). Although the effect of possible inhomogeneities in the range of 1 to 5% of the nominal CTE (a very generous tolerance) could probably be compensated with active optics (unless they are very localized), a definite answer should preferably result from a series of tests at different temperatures.

This experiment has brought great confidence in the aluminium mirror technology. Both technologies, BU and EB

welding, proved adequate for the manufacturing of 2-metre-class astronomical mirrors. Not only were the optical tests very successful, even more important is the fact that extrapolation to larger diameters now seems possible.

### Bibliography

- [1] L. Noethe, P. Giordano, K. Mischung, F. Franza and R. Wilson, "Optical analysis of thermally cycled 515 mm metallic Al/Al-alloy mirrors", *Astron. Astrophys.* **156**, 323-336, 1986.
- [2] K.N. Mischung, "ESO's New Technology Telescope (NTT), Metallic Primary Mirror Project", Proc. of IAU Conference No. 79, ESO Garching, April 1984.
- [3] K.N. Mischung, "ESO's New Technology Telescope (NTT)", status report, April 1984.
- [4] P. Dierickx, D. Enard, F. Merkle, L. Noethe, R.N. Wilson, "The 8.2-m primary mirrors of the VLT", proceedings of the SPIE Conference ECO III.

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