

IAU Colloquium No. 79:
"Very Large Telescopes, their Instrumentation and Programs"
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Foreword

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The optical/infrared range is the domain of continuum radiation and numerous atomic and molecular transitions of abundant elements in mildly ionized and cool gaseous phases which are present in many different types of astronomical objects. Therefore observations in this range remain crucial to astronomy even in an era of rapid development of the instrumentation for X-ray, UV and radio observations. While it is conceivable that sometime in the rather distant future every observation will be made from space, it is a fact that now and in the foreseeable future optical and IR observations will remain less expensive from the ground than from space.

It is for these reasons that several astronomical communities throughout the world are planning the construction of very large ground based telescopes. IAU Colloquium No. 79 was almost entirely devoted to the most important technical problems: construction and support of large mirrors, design of domes, control of the dome seeing, measuring image quality, design of the correctors and of the instrumentation. The solutions of these problems will determine the performance of the Very Large Telescopes.

There are however other important aspects which have not been discussed at this Colloquium. The Very Large Telescopes will be so different, so few and so expensive that it is going to be essential to find new ways of doing ground-based observations which will permit one to exploit the capability of the new telescopes to their absolute maximum. In particular, it will be useful to explore how to adapt to large ground-based telescopes some of the features which have made the success of space research and radio observatories in the operation and exploitation of their systems. Some of these developments include extreme reliability, remote control and diagnostics, massive and coherent observing programs, simultaneous completion of telescope and instruments, sophistication and power of data acquisition and reduction. These features, which were mentioned in the discussion on the last day but were not discussed in depth during the Colloquium, must be incorporated in the final plan of the Very Large Telescopes.