

Curved focal planes and freeform optics: the future of astronomical instrumentation

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Enabling disruptive technologies has always been crucial to trigger science discoveries. The daring challenges in astronomy and astrophysics are very demanding in terms of high angular resolution and high contrast imaging, and require extreme stability and image quality. Instruments based on current classical designs tend to get bigger and more complex, and are faced to ever increasing difficulties to meet science requirements.

Developing high performance, compact and affordable instrumentation for the next generation of giant observatories requires breakthrough optical architectures to reduce the complexity of instruments, simplify the operability of systems and offer increased performances.

We will review some of the on-going activities for the emergence of innovative optical design, curved detectors for UV, VIS and NIR observations, as well as optical fabrication, and their current or potential applications on the VLT, the E-ELT, WFIRST and the future of giant space observatories .