

From optical design to verified performance

Sagittal Optics is an optical and opto-mechanical engineering company in Tenerife, Canary Islands. We design and build optical instrumentation, also performing radiometric calibration and optical performance validation.

The company was founded by optical engineers with decades of experience on instrumentation for world-class observatories. That is also why we are where we are: the Canary Islands host some of the best observing sites on Earth.

WHAT WE DO

1. Optical design and analysis

Imaging systems, spectrometers, telescopes and relays, from requirements to a manufacturable prescription. Optimisation, tolerance and sensitivity analysis, error budget allocation, stray light and ghost analysis. Full designs, contributions to designs you already hold, or an independent review before you commit to hardware.

2. Opto-mechanical design and build, including cryogenic and vacuum

Optical benches, monoliths, barrels, lens and mirror mounts, flexures and cryostats. STOP and FEA analysis, tolerance allocation and compensator strategy, through to integration and alignment.

3. Alignment, boresight and multi-camera integration

Optical axis measured against the mechanical mounting interface, delivered as a boresight vector and lateral offset. Relative alignment across multi-camera platforms, mosaic geometry and band-to-band co-registration, with declared repeatability.

4. Radiometric calibration and optical characterisation

Spectral radiometric calibration ($\text{W/m}^2/\text{sr}/\mu\text{m}$) of VIS-NIR instruments up to approximately 190 mm entrance pupil, traceable to international standards, with MTF, distortion and a full uncertainty budget.

Doing all four means an instrument can go from optical design to verified hardware without being handed between suppliers. Where you already own the optical design, we pick it up from there.

SELECTED WORK

Canary Islands Constellation. Boresight characterisation and multi-camera relative alignment across 19 cameras on three satellite platforms in visible, SWIR and LWIR, including mosaic geometry and band-to-band co-registration, across campaigns from arrival to post-environmental test. Radiometric calibration of the VIS-NIR instruments with full uncertainty budgets.

MIRLO. Compact MWIR Earth observation payload. We are developing a mid-wave infrared imaging payload for small satellite platforms. Optical design, opto-mechanics, thermal architecture and verification are all in-house. Currently in development and seeking funding and development partners.

LPQI (La Palma Quantum Interferometer) Pathfinder. Feasibility study for the pathfinder instruments, including the conceptual opto-mechanical, thermal and structural design that took the instrument concept to a defensible technical baseline.

Optical design for scientific instruments. Design and analysis for spectrometers and imaging systems, delivered both as complete optical designs and as contributions to client-owned systems. Examples include chromatically compensated VIS–NIR imaging systems operating on a common focal plane, and miniaturised variable-zoom optical systems

AN EASY WAY TO START

Most engagements begin with a small, defined piece of work rather than a full programme. Any of these can be scoped and priced quickly:

- An independent review of your optical or opto-mechanical design, with a written opinion.
- A conceptual optical design and feasibility assessment.
- A sensitivity and tolerance analysis, or an error budget allocation across your system.
- An alignment and verification strategy for an instrument you are about to integrate.
- A rough order of magnitude estimate for the full scope of work.

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