SPACE PHOTONICS

589 nm sodium guide-star laser systems

High-power sodium-line sources for adaptive-optics telescope and optical ground-station systems.

Applications to discuss: Astronomical adaptive optics; Optical ground-station adaptive optics.

Reported platform performance; configuration to confirm

Selection points
>75 W reported at 589 nm / Atomic frequency reference / Remote pump delivery over >30 m reported

Configuration options

Output reference	Wavelength	Reported optical output
Guide-star system	589 nm	>75 W

Each row is a separate configuration. Limits from different rows must not be combined.

Technical details

Parameter	Specification or condition
Beam propagation factor	M^2 = 1.04, reported
Beam asymmetry	<4%, reported
Astigmatism	<4%, reported
Wavefront error	<10 nm RMS, reported
Frequency control	Atomic wavelength reference; chirp-ready architecture
Repumping	Single-sideband repumping arrangement
Remote separation	>30 m between electronics and laser head, reported

Integration and delivery

Item	Configuration detail
Architecture	Raman fibre amplification and non-resonant frequency doubling
Telescope interface	Specify beam launch, cooling, locking and remote-pump interfaces

Conditions and configuration notes

- These figures are reported platform performance, not a guaranteed acceptance specification for every configuration.
- Confirm line shape, repumping offset, tuning and chirp capability, polarization and power at the telescope launch plane.
- Ground-based telescope use does not establish qualification for flight.