Atmospheric turbulence measurements with PRIMA

 Design and optimization of the future large telescopes and long baseline interferometers (e.g. hypertelescope) are influenced by atmospheric turbulence

The outer scale length (*L*) is highly important:

theoretically (model): Kolmogorov or Von Karman? practically: modeling the atmospheric differential piston (ΔOPD_{atm}). different ways to measure \mathscr{L} but all give controvertible value of it.

• the coherence time τ_0

• the isoplanetic angle θ_0

 PRIMA has fast FSU, metrology, a variable baseline & dual feed



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how?

• PRIMA

- Special constraints : FSU open loop, AO off/on?
- Seeing: observing for high and weak values.
- Object: binaries / calibrator star.
- Laser metrology to separate the instrument piston.



What?

<u>LHS437</u> (ref. star) <u>ADS104117B</u> Separation: 5as, same magnitude (IR), zenithal angle < 50°



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Availability of delay lines for UT1 UT2 UT4



