

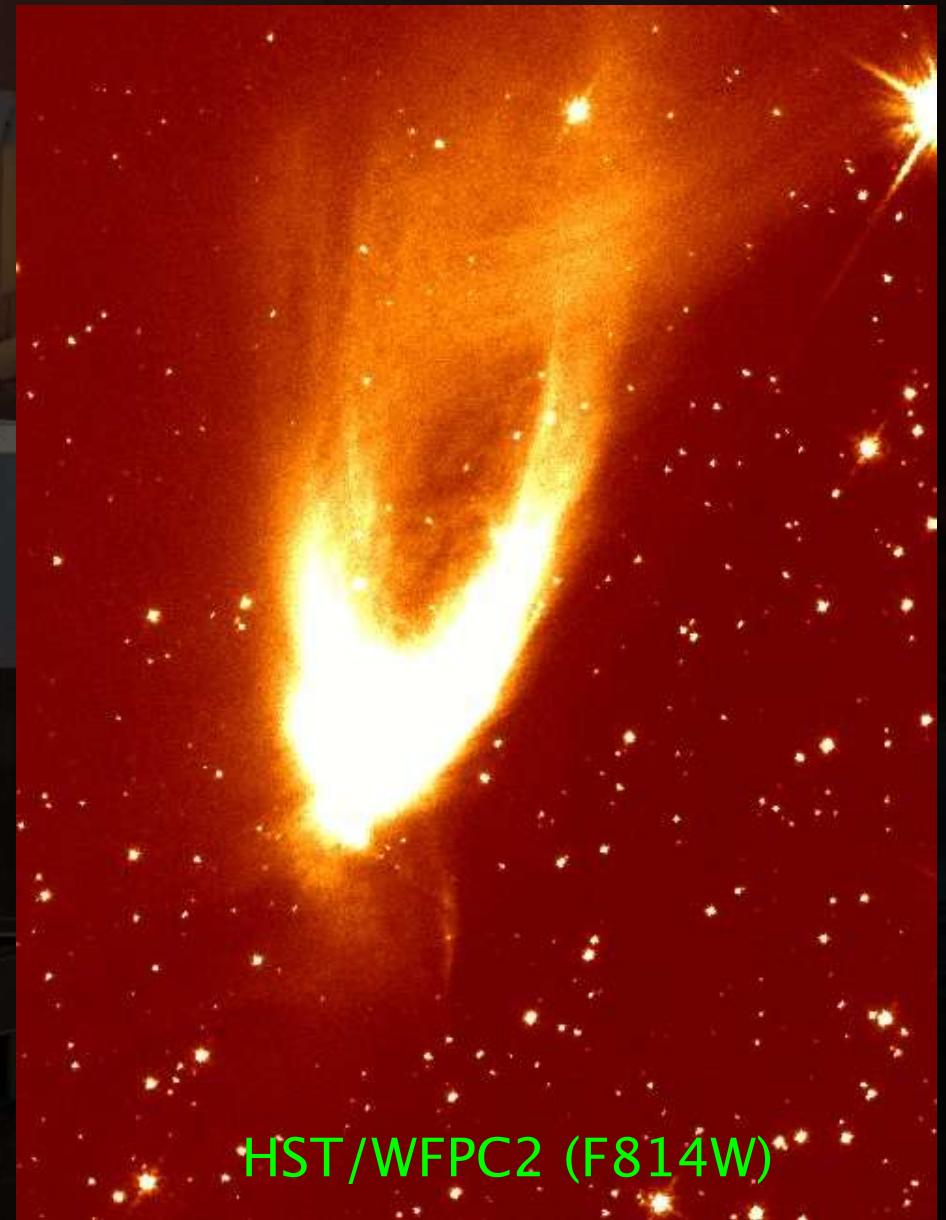
Parsamian 21: MIDI observations of an edge-on FUor disc

Scientific rationale

Fuors: low-mass pre-main sequence stars exhibiting outbursts in optical light of ~ 5 mag

Outbursts are due to enhanced accretion from circumstellar disc onto the star

Parsamian 21 is a unique FUor: it is surrounded by an edge-on disc \rightarrow ideal case to study disc structure



Parsamian 21: MIDI observations of an edge-on FUor disc

Simple source model



Very oblate elliptical disc oriented E-W

Expected E-W size at $10\ \mu\text{m}$: few AU (~ 10 mas at a distance of 400 pc)

Immediate objective

Measure the size of the mid-infrared emitting region

Measure the wavelength-dependence of the fitted sizes

Measure the optical depth of the $10\ \mu\text{m}$ silicate feature and derive precise extinction for the target

Use the determined parameters in disc modelling

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Requested configuration

MIDI on UT1-UT3

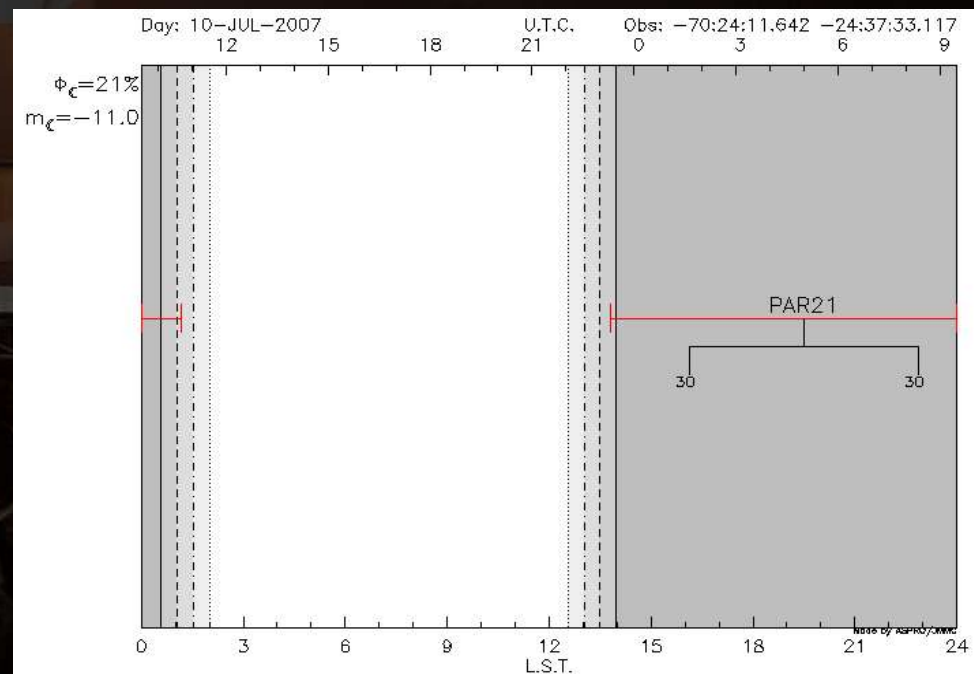
1 visibility measurement at 0 hour angle (1h of obs.)

Spectrally resolved visibilities in the N band (8-13 μm)

Spectral resolution: low (PRISM mode)

Beam combiner: HIGH_SENS

Technical feasibility



Preferred date of observation:

JUN-JUL-AUG 2007 (P79)

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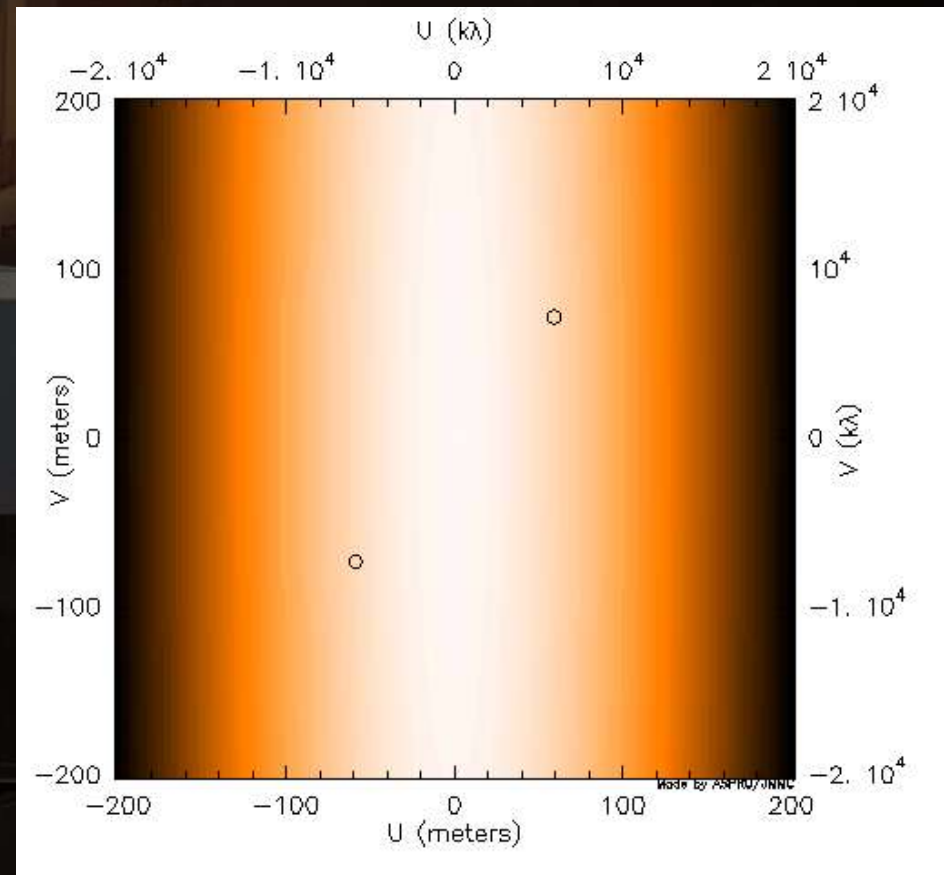
Technical feasibility

Source brightness:

$N=3.7$ mag (Cohen 1974)
Observable with MIDI
in low spectral resolution
in HIGH_SENS mode

$V=12$ mag (estimated from USNO)
The source is bright enough for
MACAO

Source model: elliptical disc

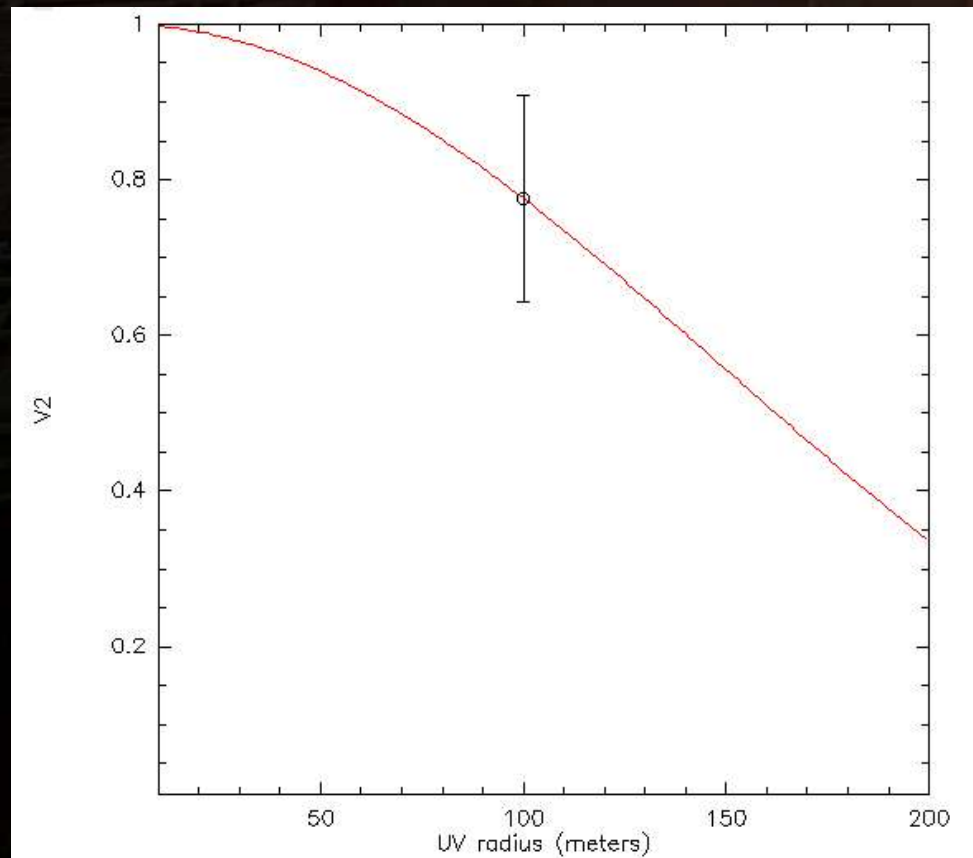


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Technical feasibility

Expected visibilities:

$V^2 \sim 0.8$ at $10 \mu\text{m}$



Calibrators:

Name: HD184406

Spec. type: K3III

Brightness: $N=2.0$ mag

Visibility: $V^2=0.97$

Dist. to sci. target: 2.5°

Name: HD179987

Spec. Type: K2

Brightness: $N=2.1$ mag

Visibility: $V^2=0.99$

Dist. to sci. Target: 4.2°