MIDI observations of W Hya

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Scientific rationale

W Hya is an AGB star with a dusty circumstellar shell, bright at mid-IR wavelengths due to dust thermal emission. AGB stars are Long Period Variables, and precursors of Planetary Nebulae (PN). Recent MIRAC observations show a partially resolved envelope, possibly asymmetrical.

Resolving the circumstellar shell will provide constraints on the mass loss processes on late type stars. Measuring the inner radius of the shell will provide an estimate for the dust condensation temperature or an evidence of interrupted mass loss. Detecting an asymmetry in the dusty shell will provide evidences of asymmetric mass loss and provide clues on the formation processes of asymmetric PN.

VLTI is needed to resolve the inner radius of the dust shell, which is bright in the mid-IR and has an expected diameter of ~30-50 mas.

Choice of instrument and configuration

- Dust emission is peaked in the mid-IR: MIDI
- Use multiple channel in the N band: constrain temperature and density distribution of circumstellar shell

- Single short baseline (64m) provides good uv coverage -> allows to search for shell geometry

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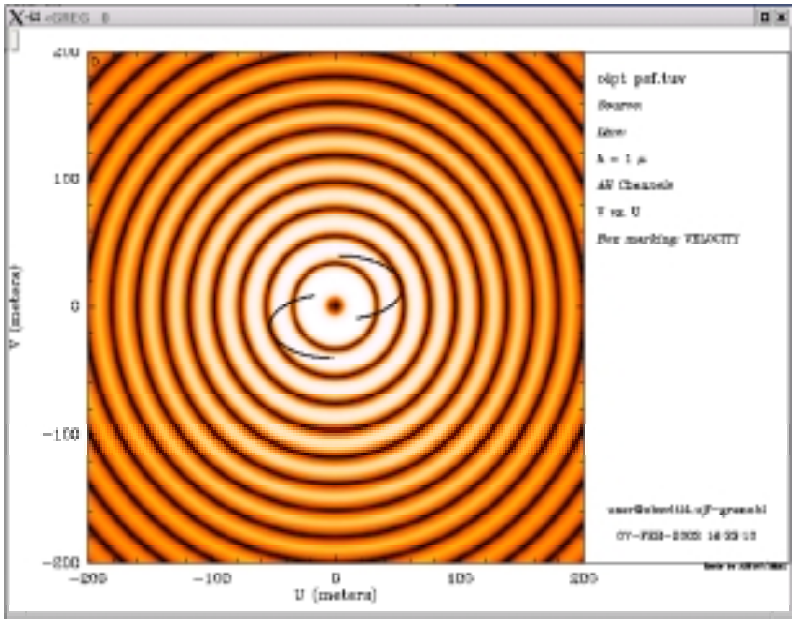

Strategy of astrophysical analysis of data

Data will be interpreted by fitting model visibilities with radiative transfer model of the source. Fit will allow determination of shells parameters (T(r), n(r), shell geometry)

Bright source: sensitivity is not a problem

Good uv plane coverage needed to fit shell parameters