# Microjet candidates in RhoOPh molecular cloud

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## The background

The molecular material ejected from protostars, in the form of jets and collimated outflows, help confirm the presence of recent star formation. Surveys of star-forming regions are able to uncover both the protostellar cores and their outflows. To help understand how a cloud evolves into stars, we have executed wide-field near-infrared and millimetre surveys of the rho Ophiuchus star-forming cloud (**Khanzadyan et al. 2004**, **Stanke et al. 2006**).

**Our surveys cover complete connected regions**, three to four times wider than previous surveys (e.g. Gomez et al. 2003). Our ESO/NTT observations in the 1-0 S(1) molecular hydrogen line demonstrate the existence of many new outflow components. The wide fields have enabled us to connect H2 components to potential bipolar outflows from sub-millimetre cores. This was essential since a parsec-scale outflow could extend over twenty arc-minutes at the distance of 130 pc to rho Oph.

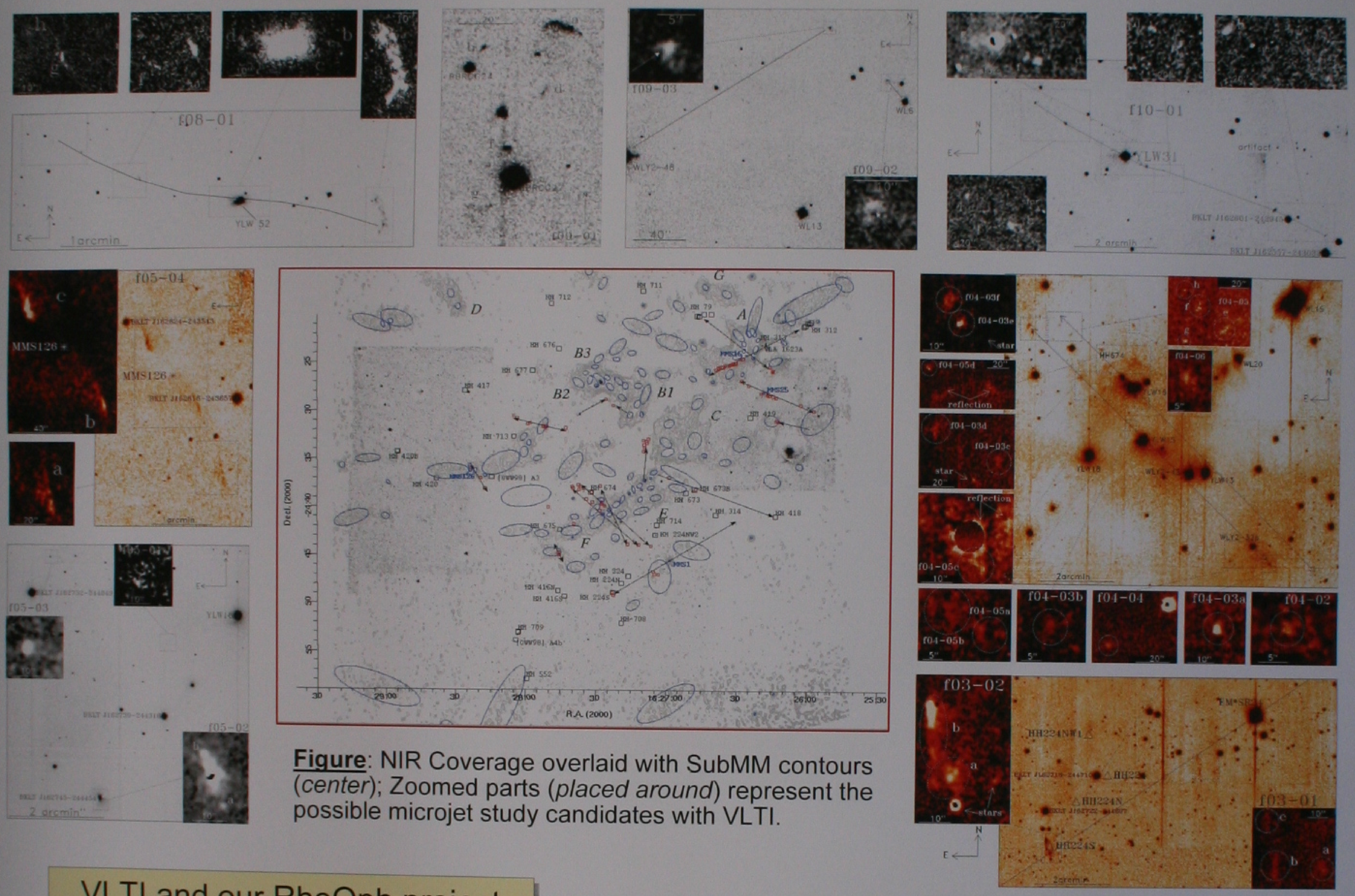

**Figure**: NIR Coverage overlaid with SubMM contours (*center*); Zoomed parts (*placed around*) represent the possible microjet study candidates with VLTI.

## VLTI and our RhoOph project

**Points to keep in mind:**

- Outflow phase in PMS stars is thought to extend throughout the evolution from Class0 till late ClassII stages.To understand this phenomena it's essential to try to "peak" into the area close to the central engine and into the mechanism on how the individual knots in the jets are formed.
- Protostellar jet are most of the time remarkably collimated, but recent observational studies done with HST and ground-based telescopes show that the in the base the have opening angles reaching up to 50 degrees. According to the current understanding, jets are then collimated by rotating magnetospheres.
- For a jet speed of 300 km/s, new formed knots would move substantially to enable us to clearly detect the movement in several days apart.
- Our selection of candidate microjet sources is derived from the simple fact that this objects do posses an outflow detectable without use of Interferometers. So in this way we have high confidence of detecting knots close to sources of ejection.

**The Aim of This Work is to Use VLTI in:**

- **The detailed structural study of Microjets to address the issues of proper motion and formation of knots in the jets.**
- **The study of the engine itself below the so-called "Alfven surface" located within a few AU of the disk.**

**IN ADDITION**

**There is a possibility of using the VLTI in resolving the shock structure in the bright Bow Shock in order to relate them directly with the results from the models (see Khanzadyan et al. 2003: Smith et al. 2003)**