Constraining the jet launching region in microquasar GX339-4 with PRIMA

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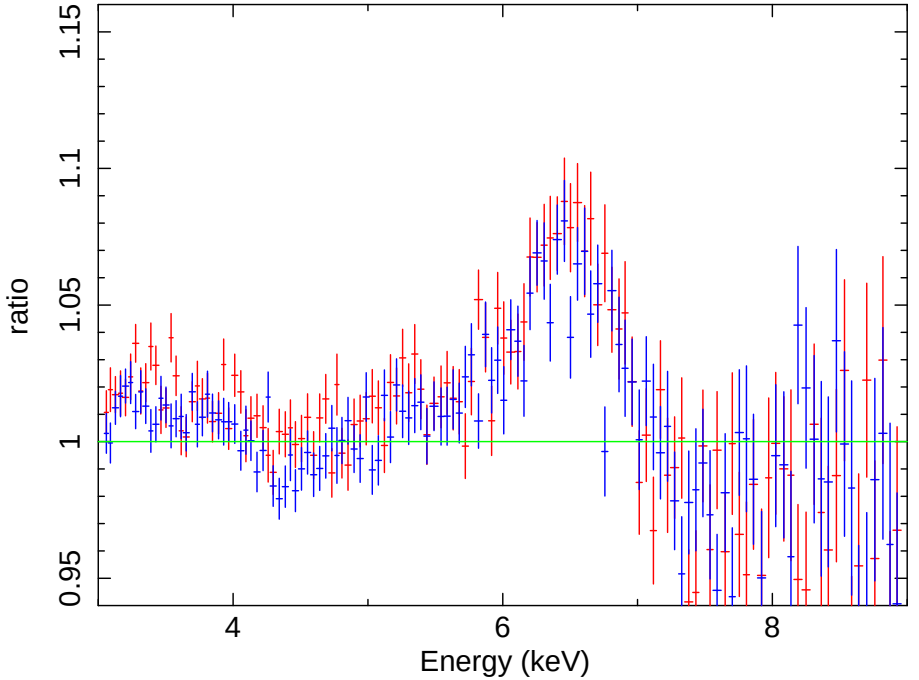
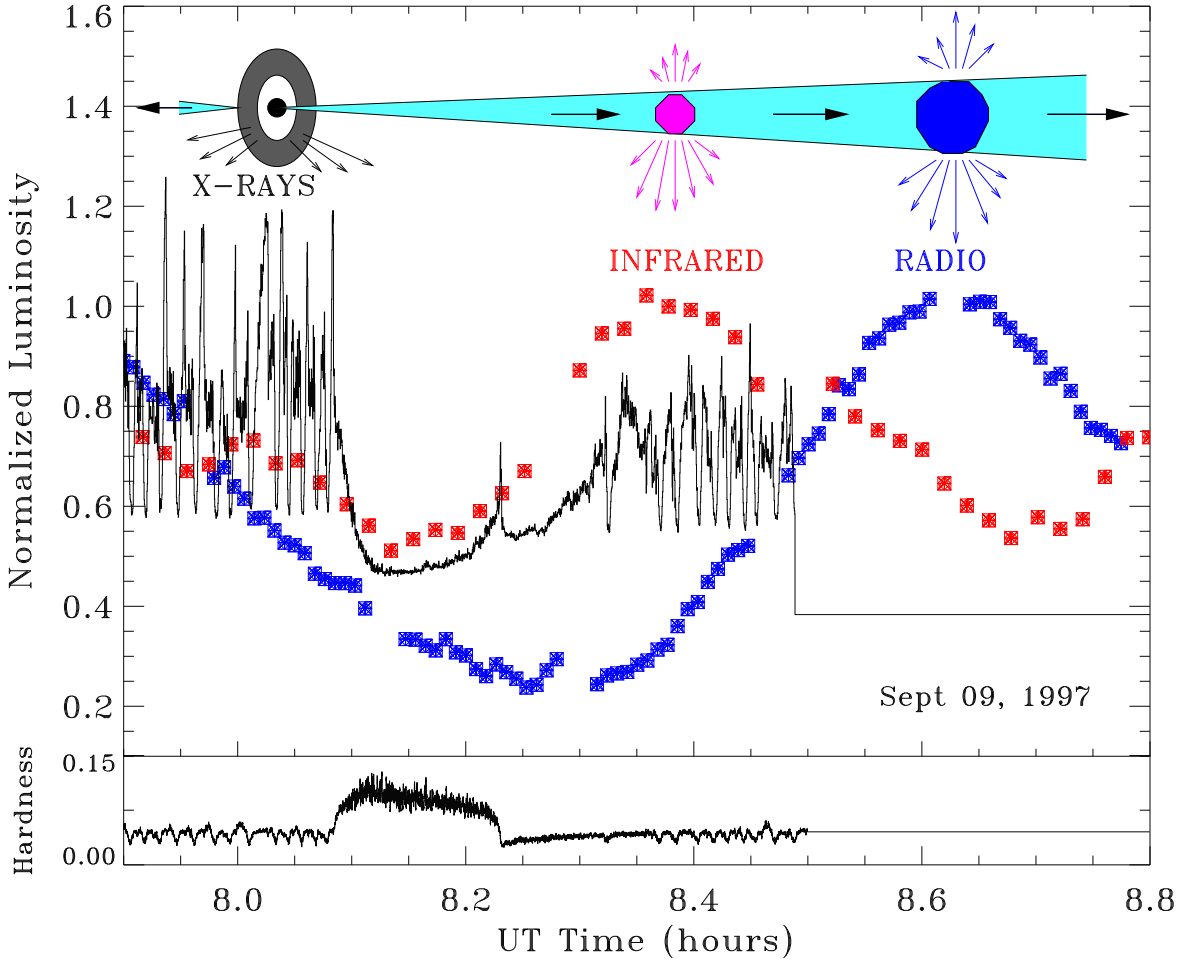
Microquasars

- spatially unresolved binaries with one very compact component, some of them - black hole candidates
- inner parts of the accretion disk revealed in X-ray observation - relativistically broadened Fe Kα line (an example from XMM-Newton observation of GX339-4 in Nov.2004):



Model of Microquasars

- Mirabel F. (2007): common model for X-ray binaries

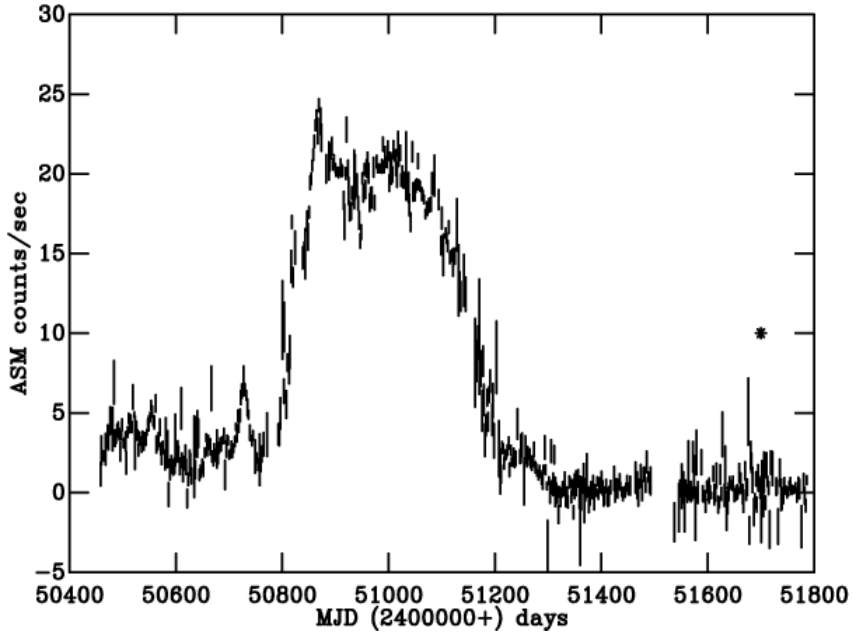


The connection between jet and accretion

- The studies of microquasars in our Galaxy can provide in the future new insights on:
  - large fraction of ultraluminous X-ray sources in nearby galaxies
  - gamma-ray bursts of long duration in distant galaxies
  - the physics of jets in blazars

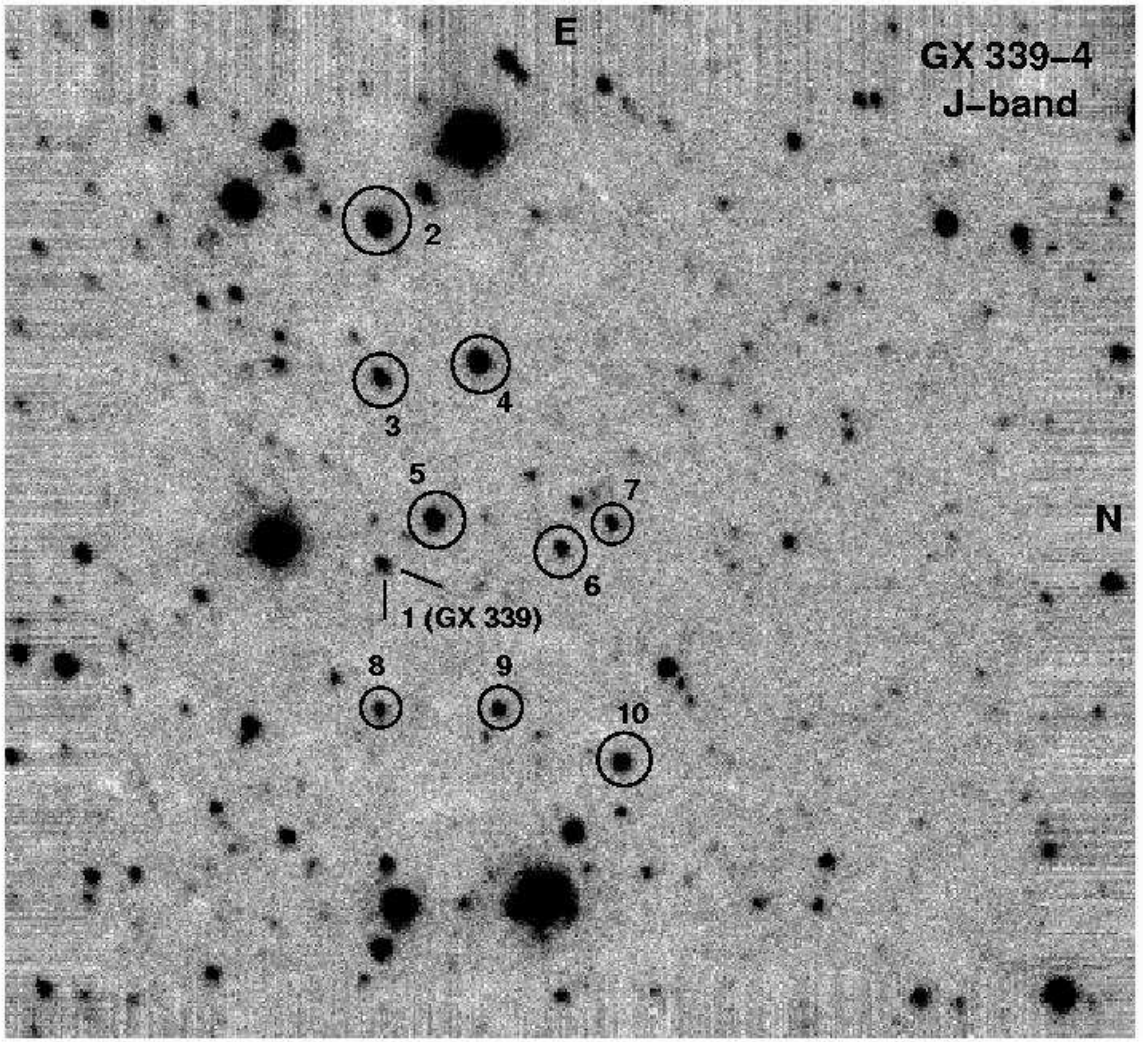
GX339-4

- dynamical properties:
  - distance: < 5.6 kpc
  - $P = 1.76d$, $M \approx 5.8 M_{\odot}$, QPO′s 1s (Hynes et al., 2003)
  - brightness: J $\approx 13 - 16$, H $\approx 12 - 16$, K $\approx 12.8 - 15$
  - energy spectrum changes from radio to 200keV
  - many outbursts (till several months long):



Position of GX339-4 on the star sky

- frame $2.4' \times 2.4'$



Scientific objectives

- study near-infrared variability of the source and compare it with X-ray variabilities
- analyze synchrotron emission radiating in IR, possibly resolve the jet onset
- improve the values of dynamical parameters of the binary system

Target of opportunity

- AMBER/PRIMA for binary model, secondary $10\times$ brighter at 1 mas separation and PA 75 (from March to October)