

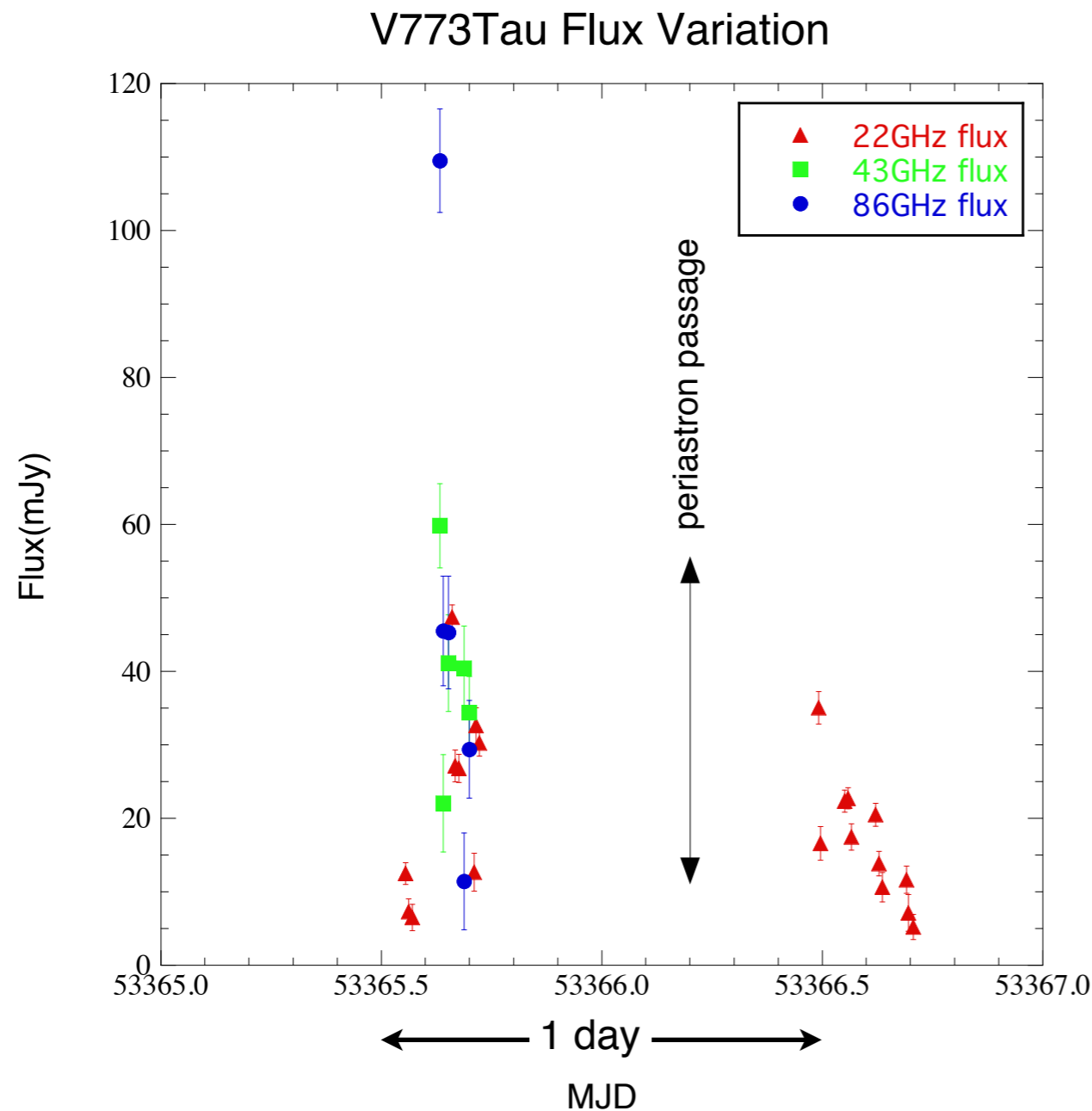
Radio Flare at Millimeter Wavelengths from Young Stellar Objects

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**Magnetic Fields
From Core Collapse to Young Stellar Objects**

17-19 May 2010, The University of Western Ontario, London

Multi-frequency Observations of V773 Tau A



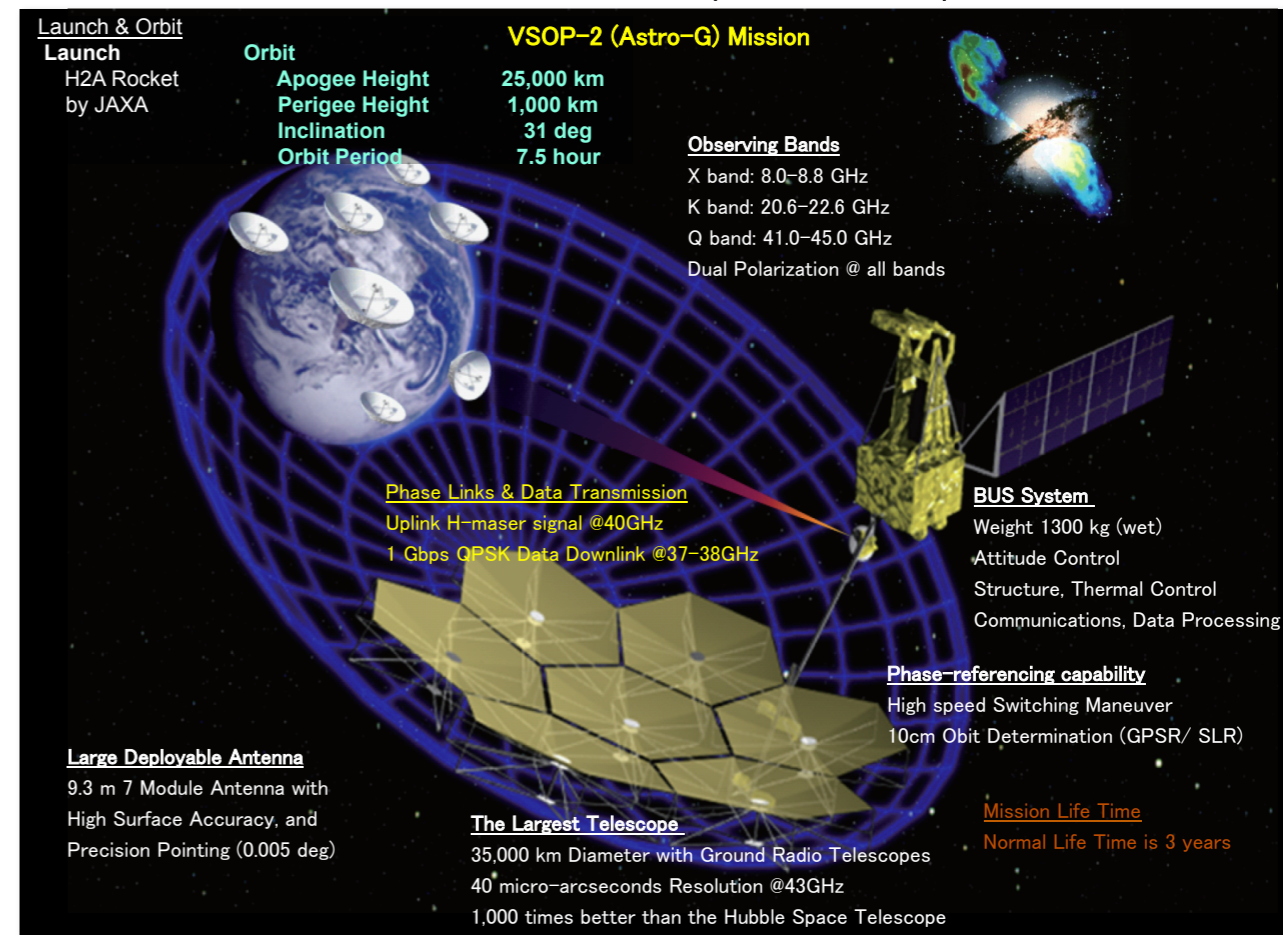
Flux variation of V773 Tau at periastron passage
(Umemoto et al. 2010, in prep.)

- Young binary system with an orbital period of 51.1033 days (Borden et al. 2007)
- X-ray and radio luminous WTTS in Taurus ($d=148.4\text{pc}$)
- Multi-frequency observations at 22, 43, 86 GHz, simultaneously, by NRO 45m telescope
- Detected radio flare at all bands just around **periastron** passage
- Consistent with the colliding magnetospheres model (Massi et al. 2008)

Imaging by VSOP-2

- the nearby star forming regions ($d \sim 150 \text{ pc}$)
- VSOP-2 angular resolution of $40 \mu\text{as} (@43 \text{ GHz}) = 1.2 R_{\odot}$
- Extent of magnetic structure $\sim 10\text{-}20 R_{\odot}$
(Andre 1996, Montmerle et al. 2000)
- V773 Tau A is suitable for direct imaging of the magnetosphere
- probing the magnetic structure around YSOs

ASTRO-G (2015/16?~)



VSOP-2 (VLBI Space Observatory Programme 2) is a successor to VSOP/HALCA in which Japan plays a leading role. The space radio telescope (ASTRO-G) will be launched by Japan Aerospace Exploration Agency (JAXA) and will be operated as a single radio telescope with a 35,000km diameter, combined with ground radio telescopes. VSOP-2 will attain the angular resolution of about 40 micro-arcseconds at 43 GHz, 2,000 times better than the Hubble Space Telescope