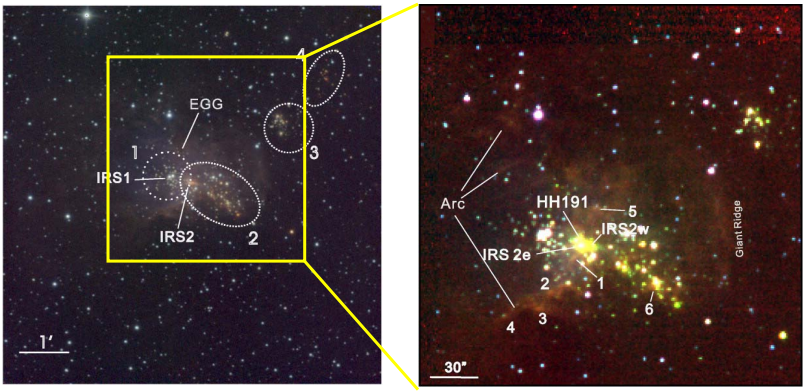
ＶＥＲＡを用いたS269の位置天文計測

本間　希樹　（国立天文台ＶＥＲＡ観測所）

赤外線で見た S269

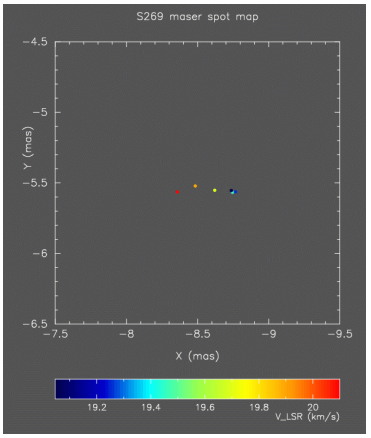
JHK images with IRSF of Nagoya Univ.
(Jiang et al. 2003)



Hundreds of infrared sources (YSO)

S269 水メーザー

- S269 : high-mass star forming regions toward anti-center, with ~200 Jy H2O masers
- Paired with J0613+1305, 0.7 deg seperation

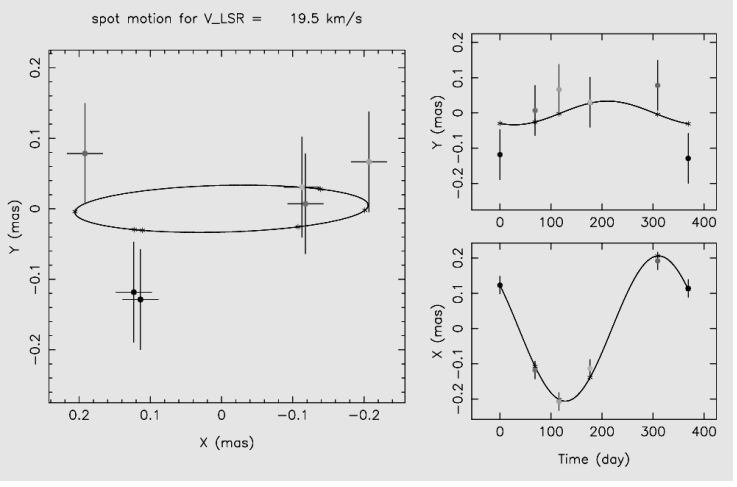


Maser map for r05073a
Linear alignment in 0.4 mas scale
Simple velocity gradient

Could it be related to accretion disk ? (c.f. Monitor by Lehkt)

水メーザー位置の変化

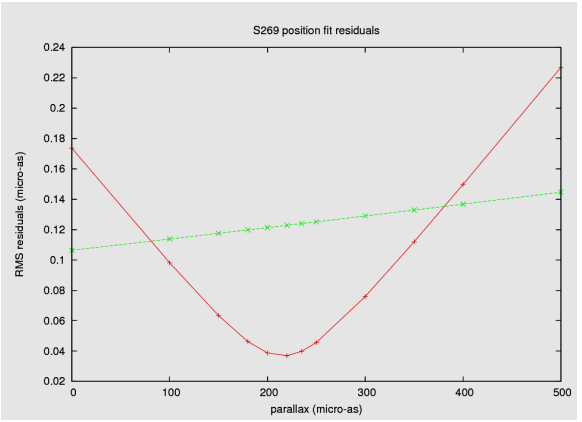
Spot position for 5 epoch spanning ~300 days (since Nov 2004)



S269 距離決定

- Parallax versus fitting residiuals

RMS residual
red：X
green：Y

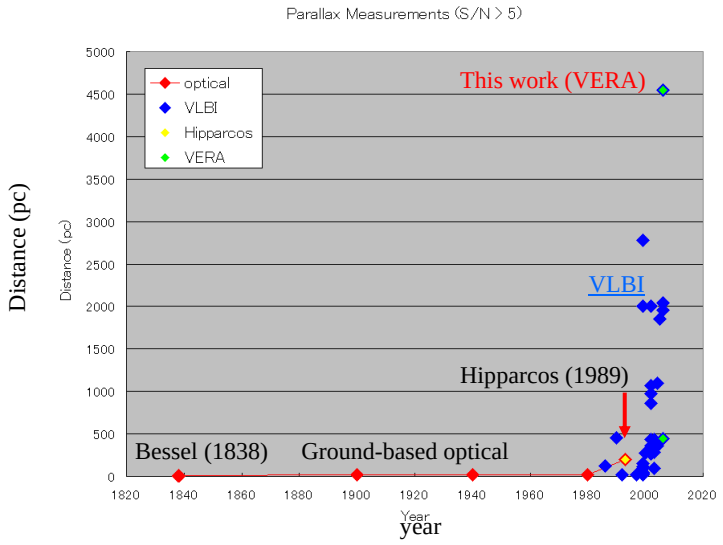


π＝220 μas、 D = 4.5 kpc！（c.f. commonly assumed : 4 kpc）

年周視差の世界記録！！ （最も遠い天体の直接測距）

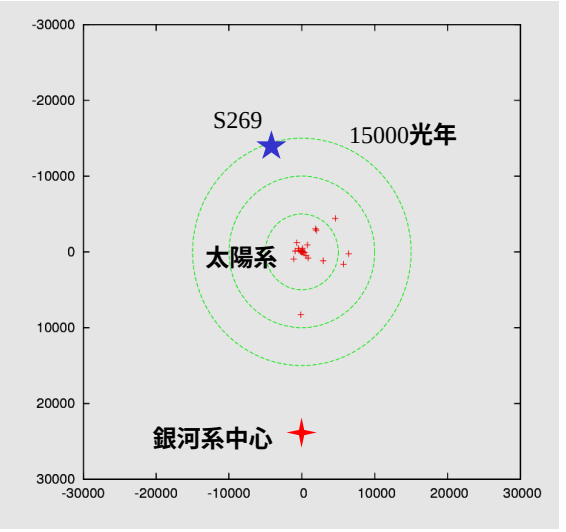
年周視差計測の歴史

- Parallax measurements since 1838 (S/N > 5)



ＶＬＢＩ位置計測天体の銀河系内の分布

- 銀河面上での分布
- 単位：光年

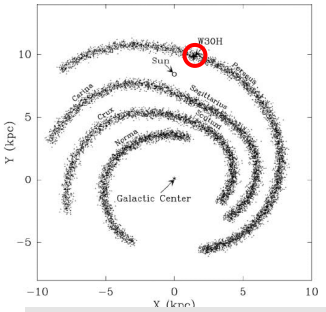


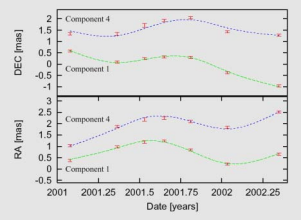
まとめ

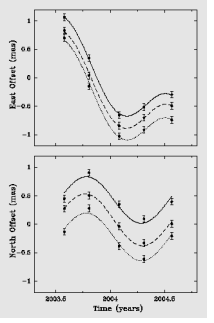
- Ｓ２６９の視差計測に成功
  視差計測の世界記録　(D ~ 4.5 kpc)
- ＶＬＢＩによるKpcスケールの位置天文計測時代が到来

W3OHの距離決定

Distanceswith methanol and H2O masers







Xu et al. (2006)

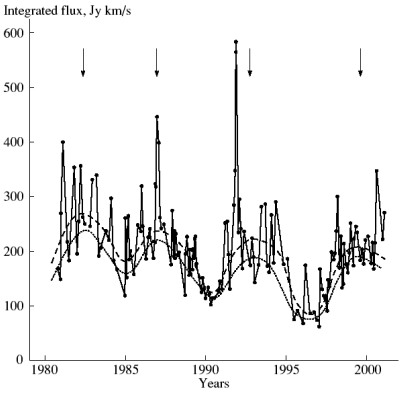
D = 1.95 +/- 0.04 kpc

Hachisuka et al. (2006)

D = 2.04 +/- 0.07 kpc

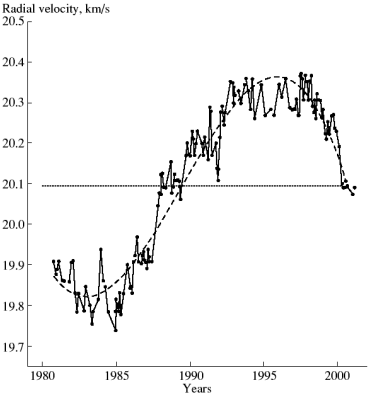
~20 year monitoring of S269

- Single dish H2O maser flux (1980-2001, Lehkt et al.)



Integrated flux

Periods of 5 ~ 6 years ?



Peak V_LSR

Period of 26 year ?