Space VLBI and the GBT

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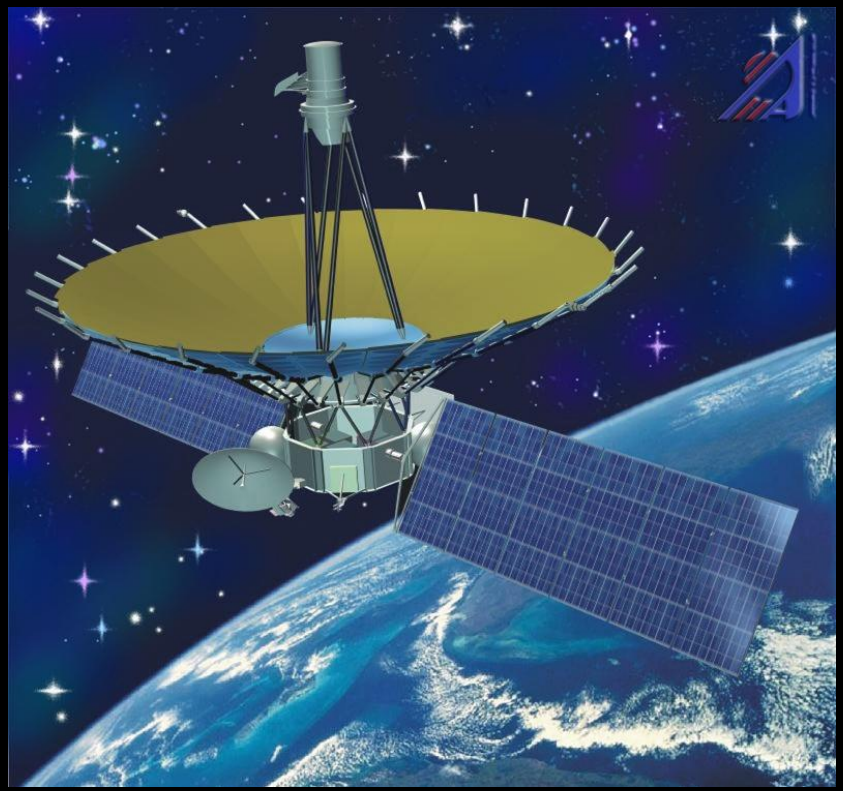
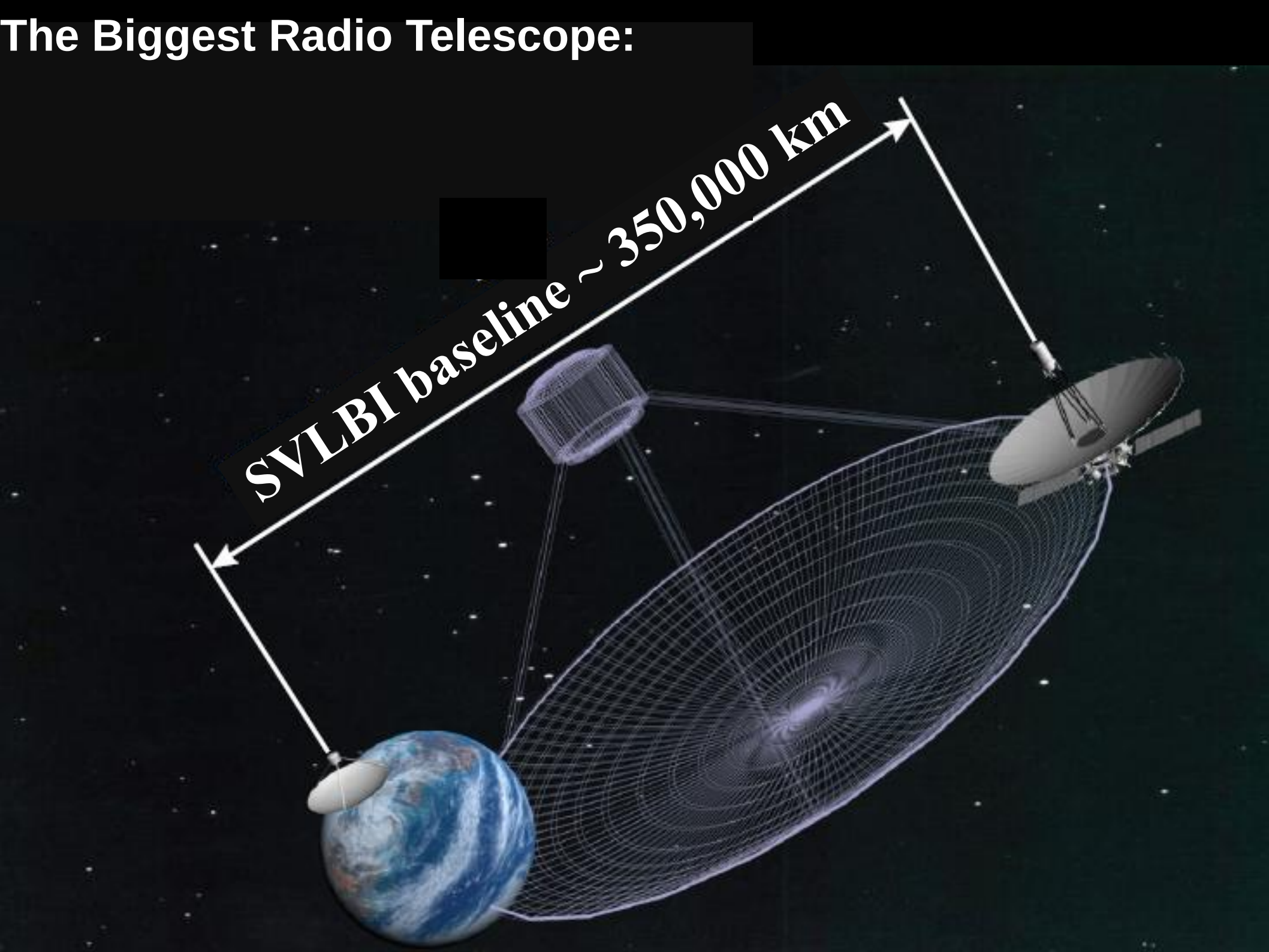
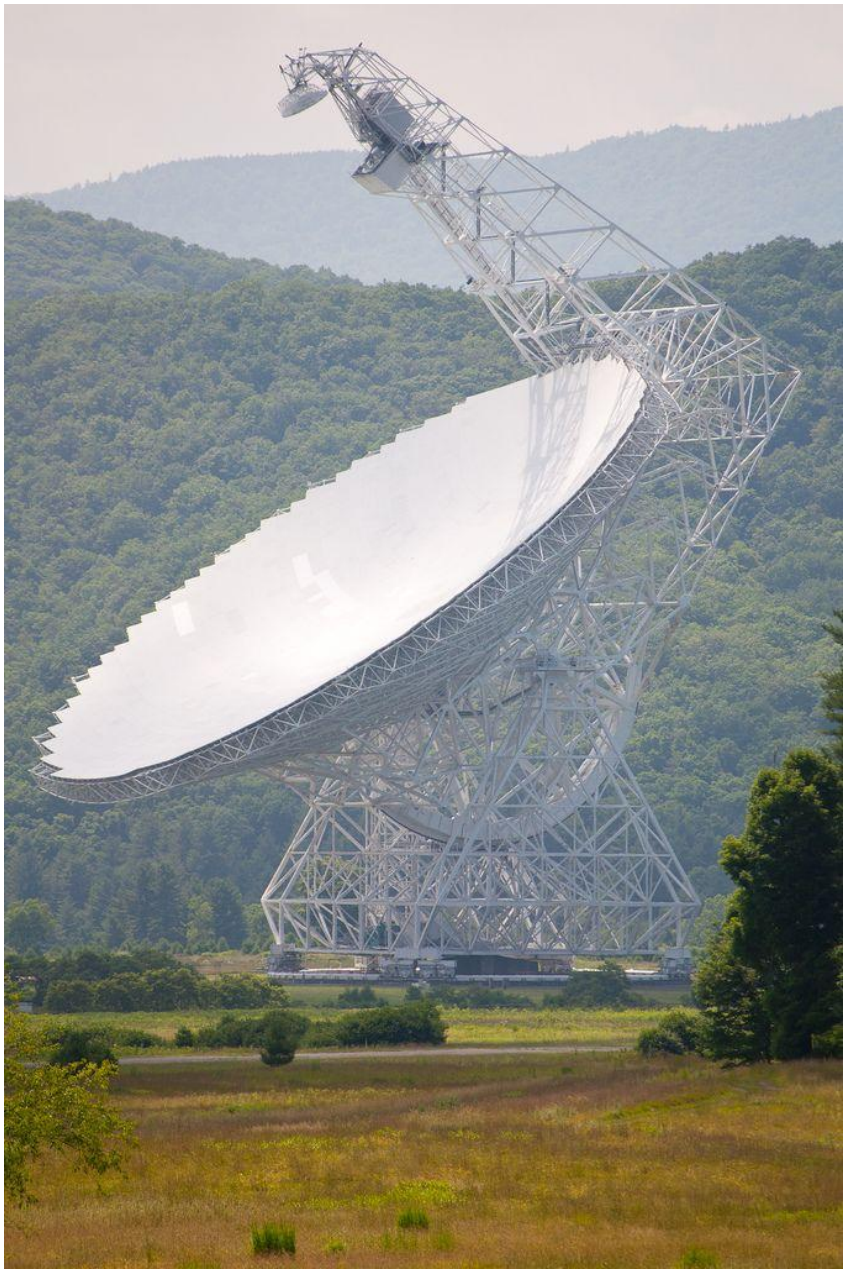
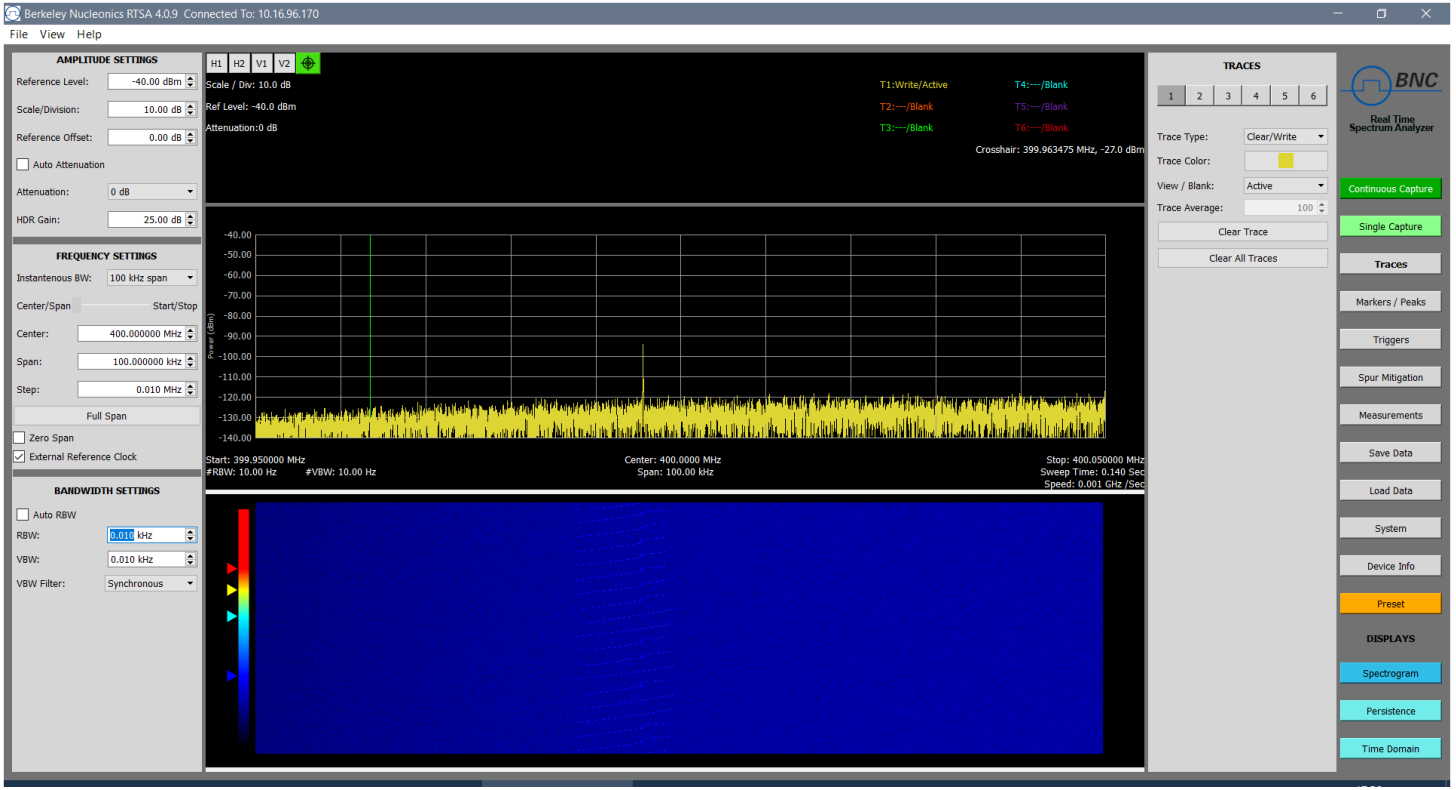


The Biggest Radio Telescope:



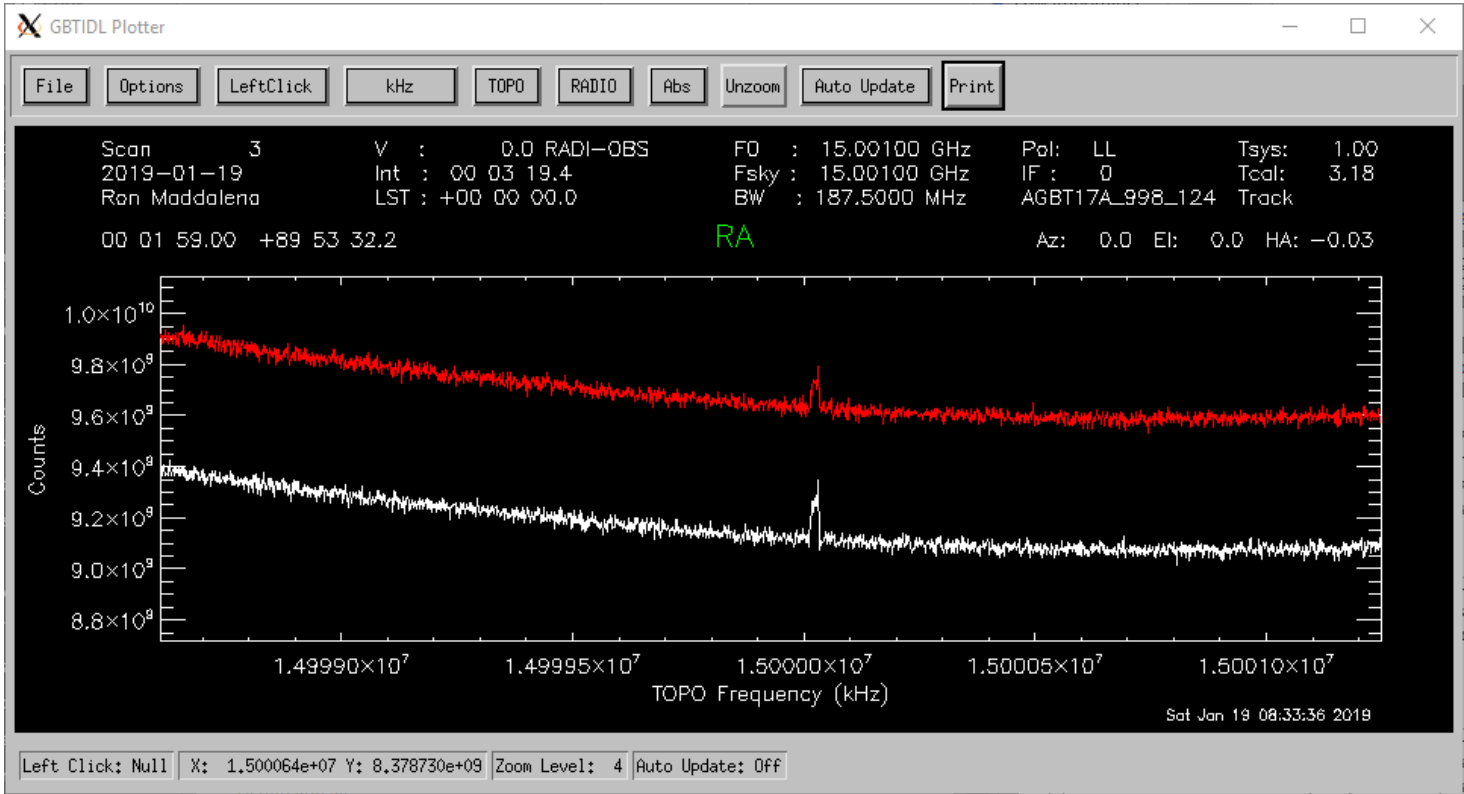
Tracking and data acquisition





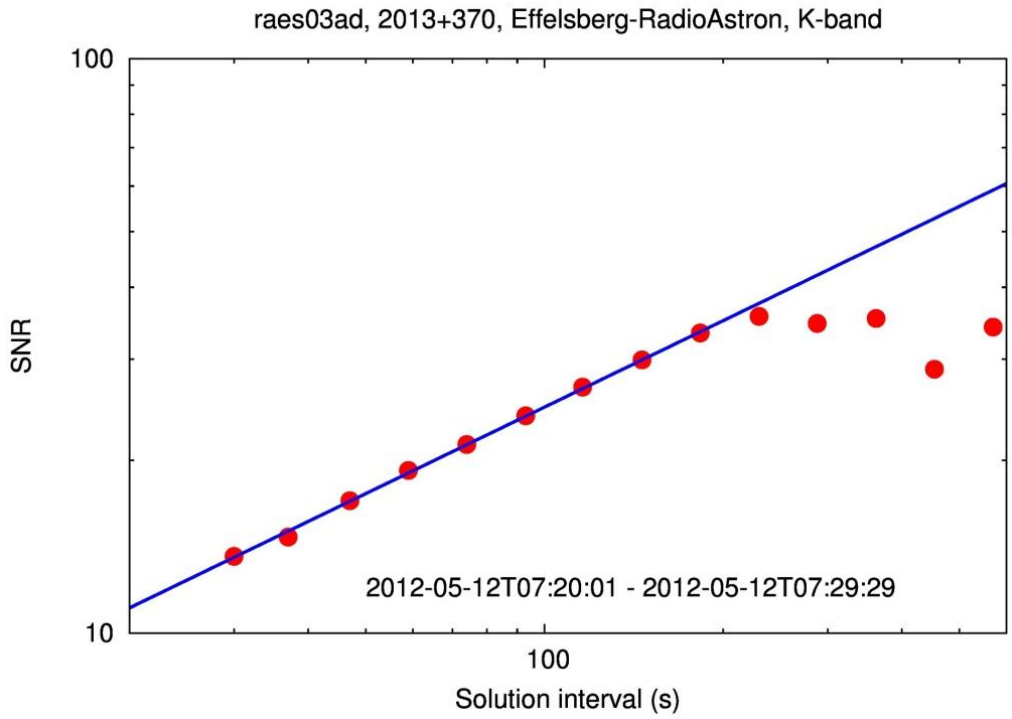
Thank you

Спасибо

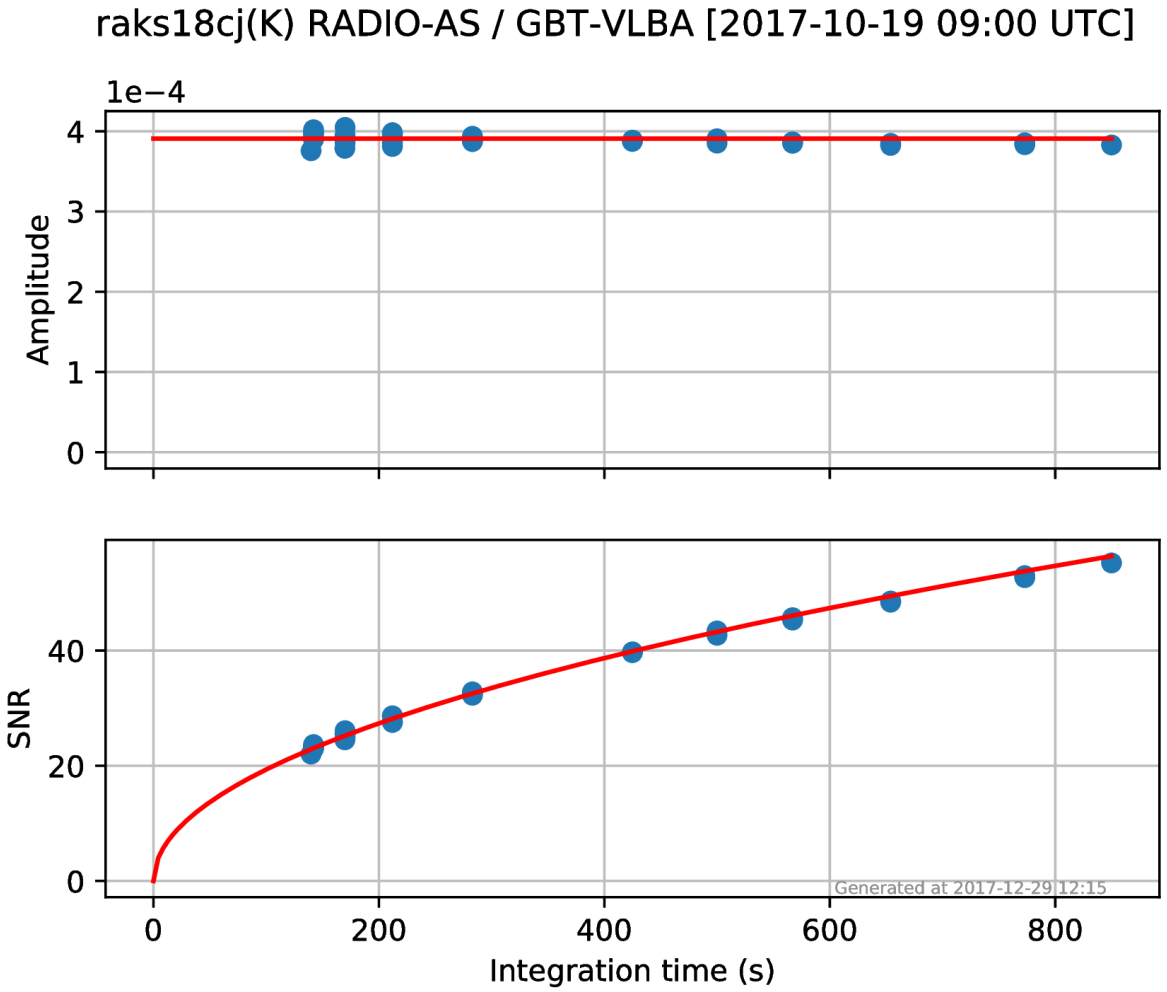


The start was not easy: K-band fringes in 2012

- RadioAstron data sampling
- Green Bank weather
- The clock

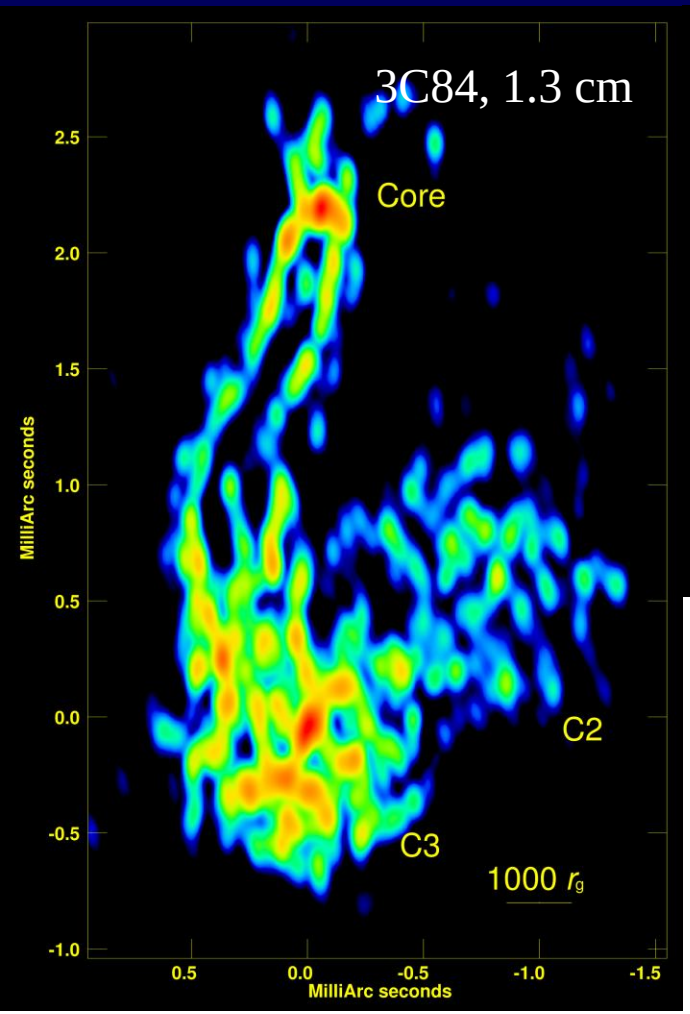


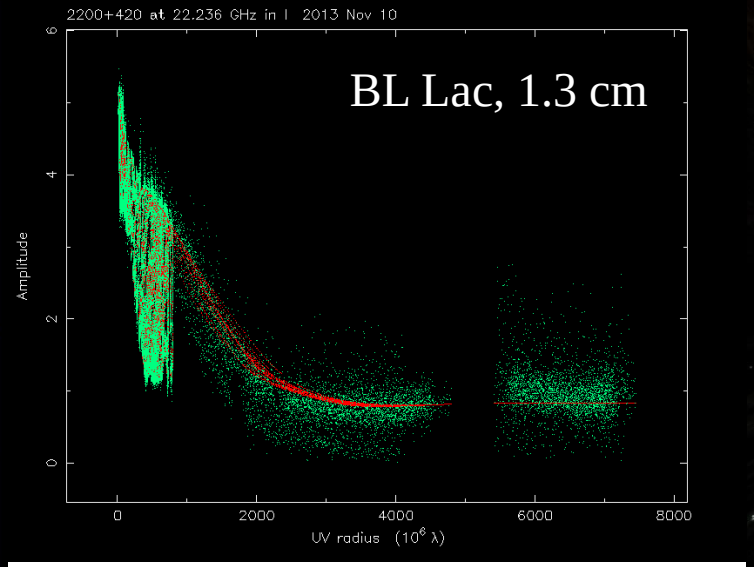
Results of coherence tests: 1.3 cm

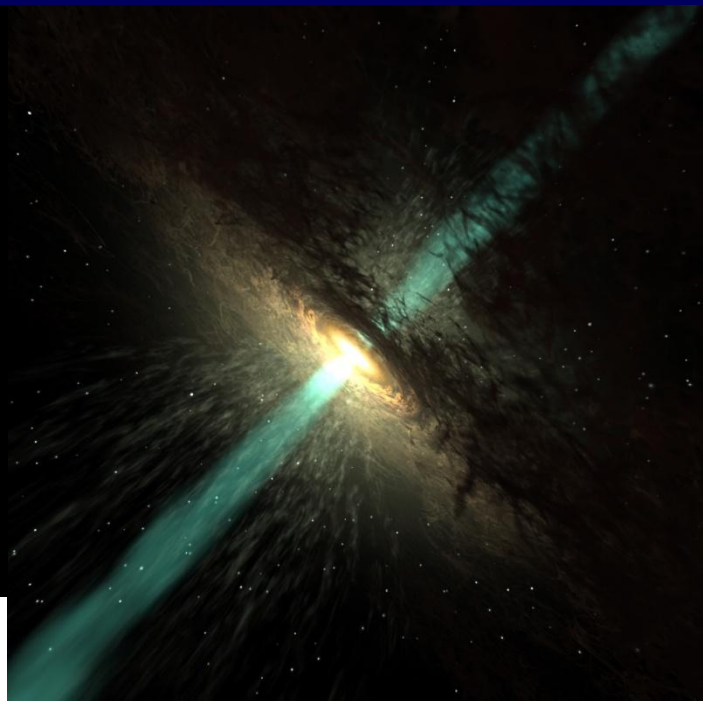


Under very good weather conditions really long coherence time can be achieved. Even in Green Bank!

Active galaxies







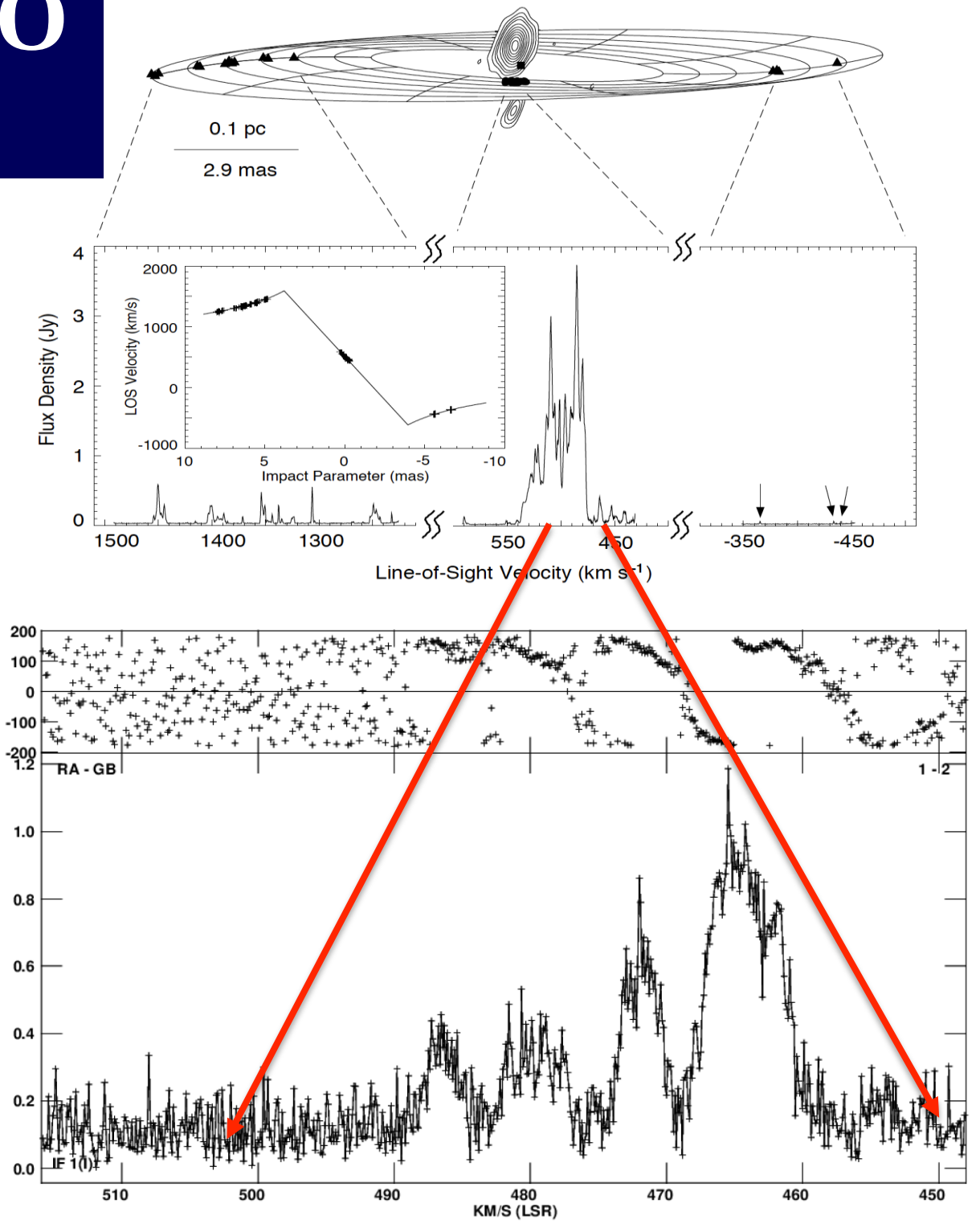
- Extreme brightness of quasars
- Accretion disks and jet launching
- Jet precession and binary black holes
- Toroidal magnetic field in jet launching regions
- Stratification of the jet plasma flow and plasma instabilities

Extragalactic H_2O masers: 1.3 cm

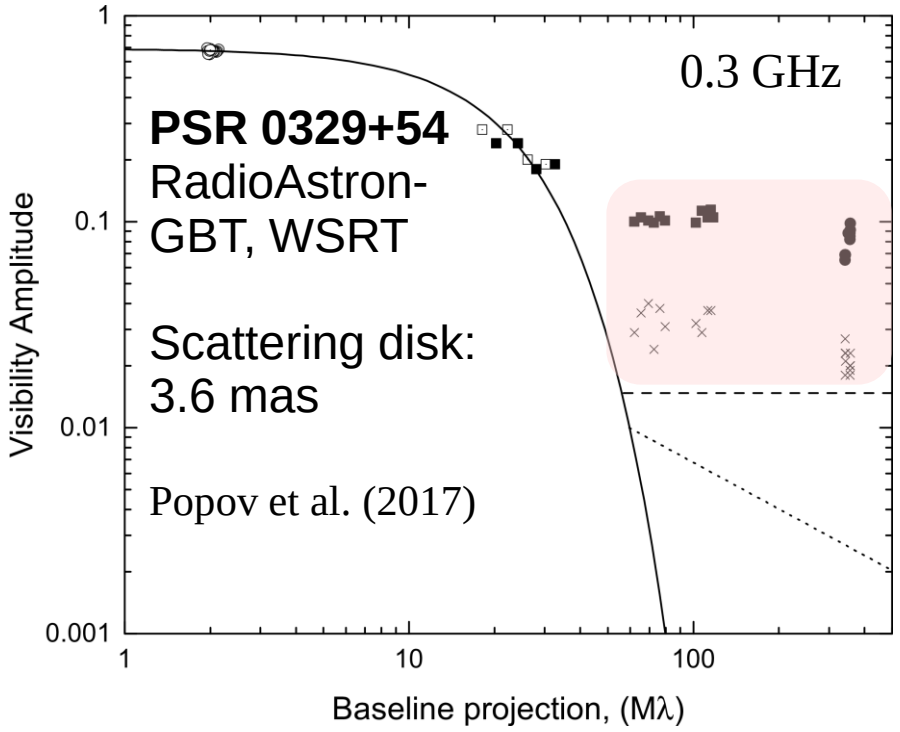
RadioAstron has found ultra-compact regions of maser emission in the accretion disk of the galaxy NGC4258: detection at projected baseline of 26 Earth diameters, 8 μas.

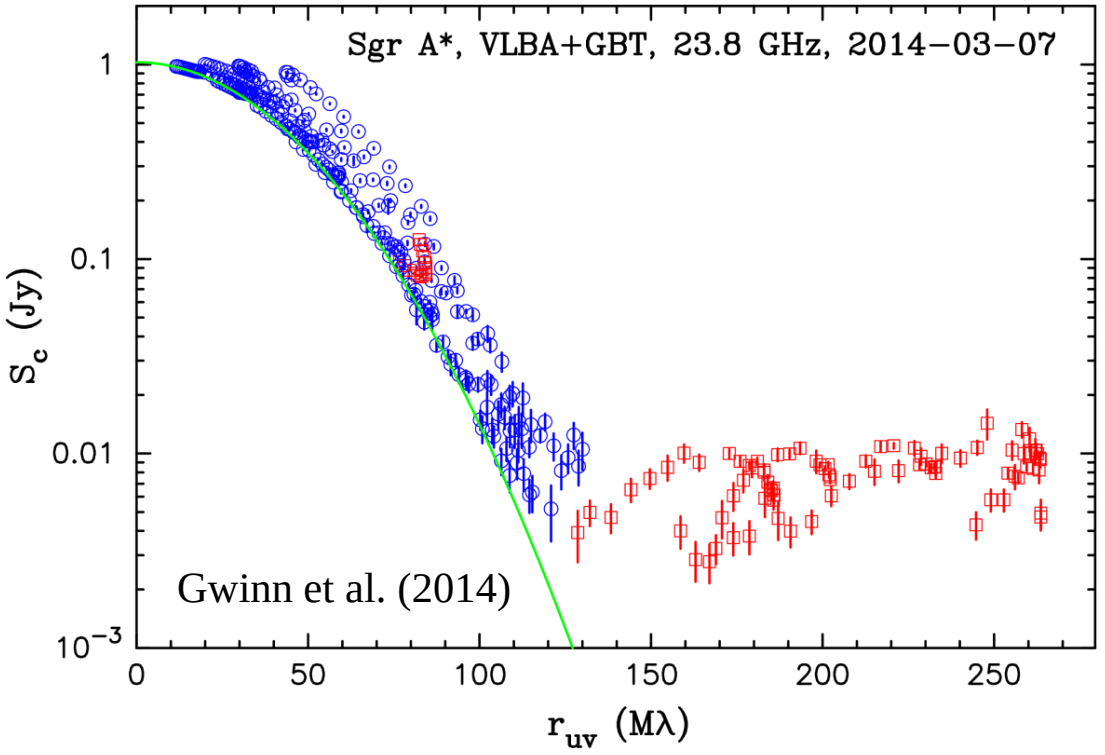
Individual components are probably unresolved (≤3 μas), need higher angular resolution.
Star forming regions?

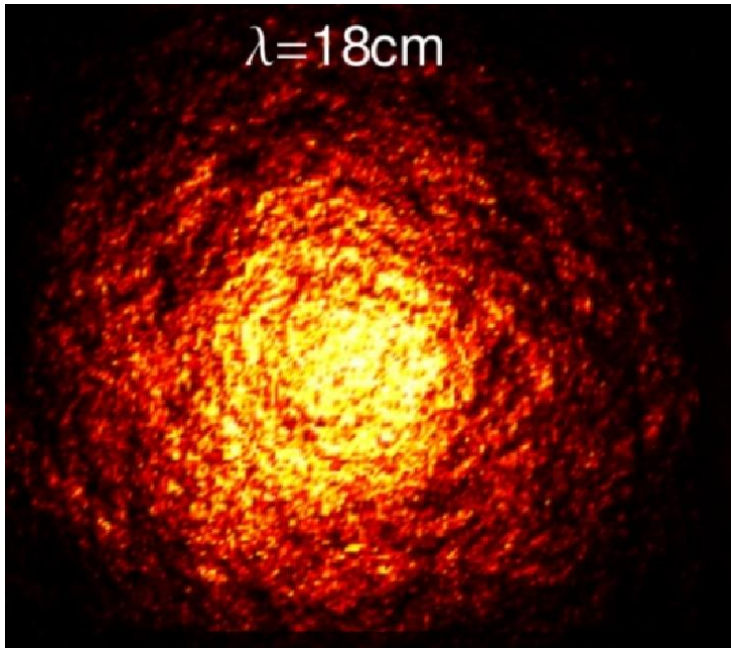
Thickness of accretion disk is about 10 μas.
Constraints kinematics and dynamics of the accretion disk.



Discovery of the scattering sub-structure







- A tool to probe turbulent interstellar medium.
- Must be taken into account by high resolution VLBI experiments.
- Hopefully, a new promising tool to reconstruct the true image of observed background target. Critical for SgrA*.