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Sodankylä 32-metre antenna for VLBI?

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The EISCAT-32m antenna

- 32-metre dish, same model as Medicina & Noto.
- Location: $67^{\circ}22' \text{ N}$, $26^{\circ}38' \text{ E}$
- At the Sodankylä Geophysical Observatory (SGO), of U.Oulu.
- Stakeholders:
 - *EISCAT*,
 - *Academy of Finland*,
 - *SGO & U. Oulu*.
- Currently owned by the EISCAT consortium, out of use.
- Two other identical EISCAT antennas in Sweden and Norway.



Table 3.1: EISCAT IPS antenna characteristics.

	Tromsø UHF	Kiruna	Sodankylä	ESR
Geographical Latitude	69°35'11" N	67°51'38" N	67°21'49" N	78°09'11" N
Geographical Longitude	19°13'38" E	20°26'07" E	26°37'37" E	16°01'44" E
Altitude	86 m	417 m	197 m	445 m
Dish type	Circular Paraboloid	Circular Paraboloid	Circular Paraboloid	Circular Paraboloid
Dish diameter	32 m	32 m	32 m	32 m
Receiving Frequency	928 MHz	1420 MHz	1420 MHz	500 MHz
Receiving Band	8 MHz	8 MHz	1.5 MHz	30 MHz
Polarization	Circular	Any	Any	Circular
System Temperature	100 K	45 K	45 K	70 K

Table 3.1 displays geographical location and general current parameters (as of 2008) of the EISCAT antennas relevant to IPS. (Source: EISCAT Website, Documentation section and Fallows., et al 2008, Wannberg et al., 2002)

Future plans

Interest

- SGO wants (U.Oulu) to obtain the antenna, and to turn it into a astronomical radio telescope capable of VLBI.
- Uses:
 - *Single-dish radio astronomy*
 - *"Finnish VLBI Network"*
 - *Astronomical VLBI*
 - *Geodetic VLBI*
- Metsähovi is supporting and "mentoring" the project both scientifically and technically.

Component	Details
Receiver	Compact QRFH Cryogenic Receiver for VLBI & Radio astronomy, 2.3-14 GHz, 2 polarization
Back-end	dBBC + Fila10G
Recording system	Mark6
Disk packs (data storages)	
Frequency reference	Active hydrogen maser
Control environment	Field System
Active frequency multiplier	5 MHz \square 10 MHz
Frequency divider	5 MHz; 1 pps
Other (optional)	Cables; various RF-components
Total costs (H maser from MRO)	231 130 €



Current status

- **No funding yet**
- **Antenna still owned by EISCAT (and Academy)**
- **SGO director Esa Turunen is trying to get the ownership of the antenna, and then funding.**
- **Support and any possible "added value" is sought for.**

Next steps:

SGO needs to

1. convince U.Oulu
2. to convince Academy of Finland
3. to convince EISCAT
4. to let U.Oulu
5. (in practice SGO)
6. take responsibility of the antenna
7. from the Academy
8. and get the ownership from EISCAT.