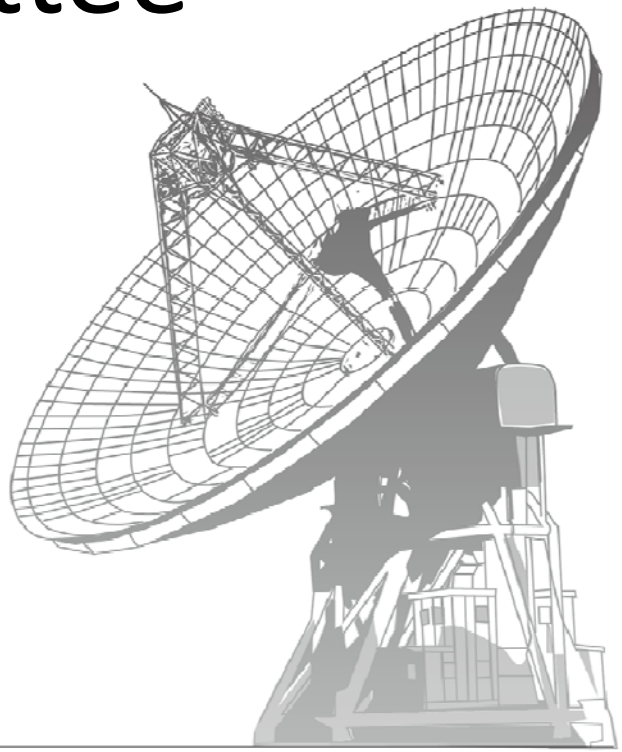
NOBEYAMA

NAOJ Radio Astronomy Frequency Subcommittee

Masao Saito

(NAOJ Frequency Management Committee Chair)

http://radio.mtk.nao.ac.jp/freqras/



NINS National Institutes of Natural Sciences

国立天文台 NAOJ

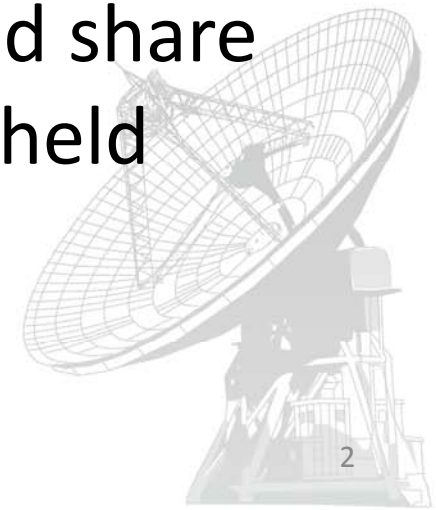
Nobeyama Radio Observatory

NOBEYAMA

国立天文台 NAOJ NINS National Institutes of Natural Sciences

Overview

- The Radio Astronomy Frequency Subcommittee (RAFS) operate under the NAOJ Advisory Committee for Radio.
- RAFS deals with issues to protect radio astronomy via various channels.
- RAFS Admin team regularly check and share the status. Committee meetings are held every three months or so.



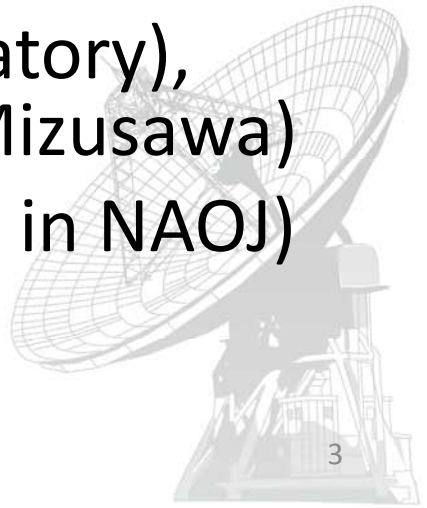
NOBEYAMA

国立天文台 NAOJ NINS National Institutes of Natural Sciences

Committee Members

- Chair Masao Saito (Nobeyama)
- Vice-Chair: Osamu Kameya (Mizusawa)
- Members: Aoki (Yamaguchi. U.), Imai (Kagoshima U.), Ogawa (Osaka-p U.), Kawabata (GSI), Kohno (U. Tokyo), Tsuchiya (Tohoku U.), Nagai (Tsukuba U.), Nakajima (Nagoya U.), Murata (JAXA), Yonekura (Ibaraki U.)
- NAOJ Members: Kameno (Chile observatory), Takebayashi (Radio division), Honma (Mizusawa)
- Ex-officio: Iguchi (head of radio division in NAOJ)

Admin: Saito, Kameya, Takebayashi, Tsuneyama



NOBEYAMA

国立天文台 NAOJ NINS National Institutes of Natural Sciences

Lead Systems

- Lead systems introduced in technical discussion.
- High (> 50 GHz) : Saito (Nobeyama)
- Mid (50 > f > 15 GHz): Kameya (Mizusawa)
- Mid-Low (15 > f > 1 GHz): Murata (JAXA)
- Low (< 1 GHz): Tsuchiya (Tohoku)

High priority items are selected from WRC agendas and MIC action plan. Moreover new technologies such as drones will be potentially threatening.

Frequency Management Basics

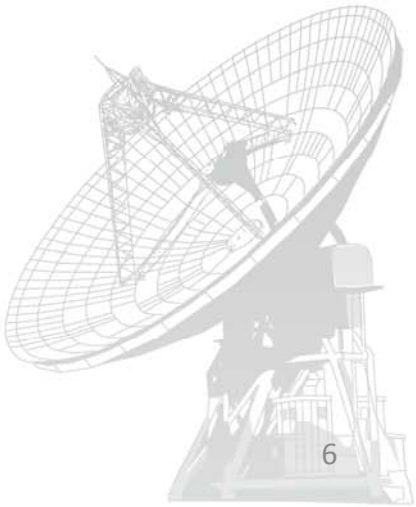
- ITU-R (Radiocommunication Sector International Telecommunication Union)
- Soumu-sho (MIC) is admin in Japan.
- Primary Service and Secondary Service
- Active Service and Passive Service

NOBEYAMA

国立天文台 NAOJ NINS National Institutes of Natural Sciences

Interaction

- WP7D (working party 7D - radio astronomy)
- MIC – admin in Japan
  - Join work team for certain objects (2016- 1.6 GHz, 20 (dl) and 30 (ul) GHz for ESIM)
  - Monitor public comments section
  - Apply protection of an observatory
- IUCAF – more science aspects
- Other WPs – liason through WP7D
- Active service for sharing study



NOBEYAMA

国立天文台 NAOJ

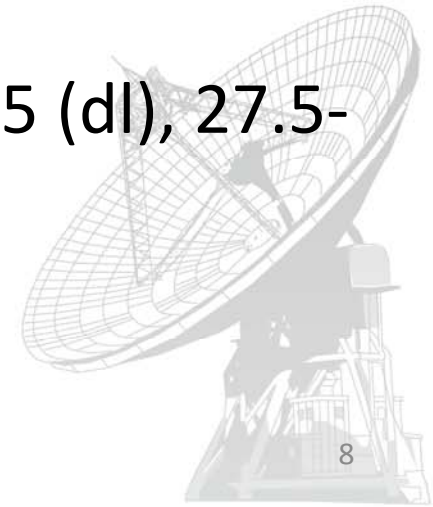
NINS National Institutes of Natural Sciences

Passive only (5.340)

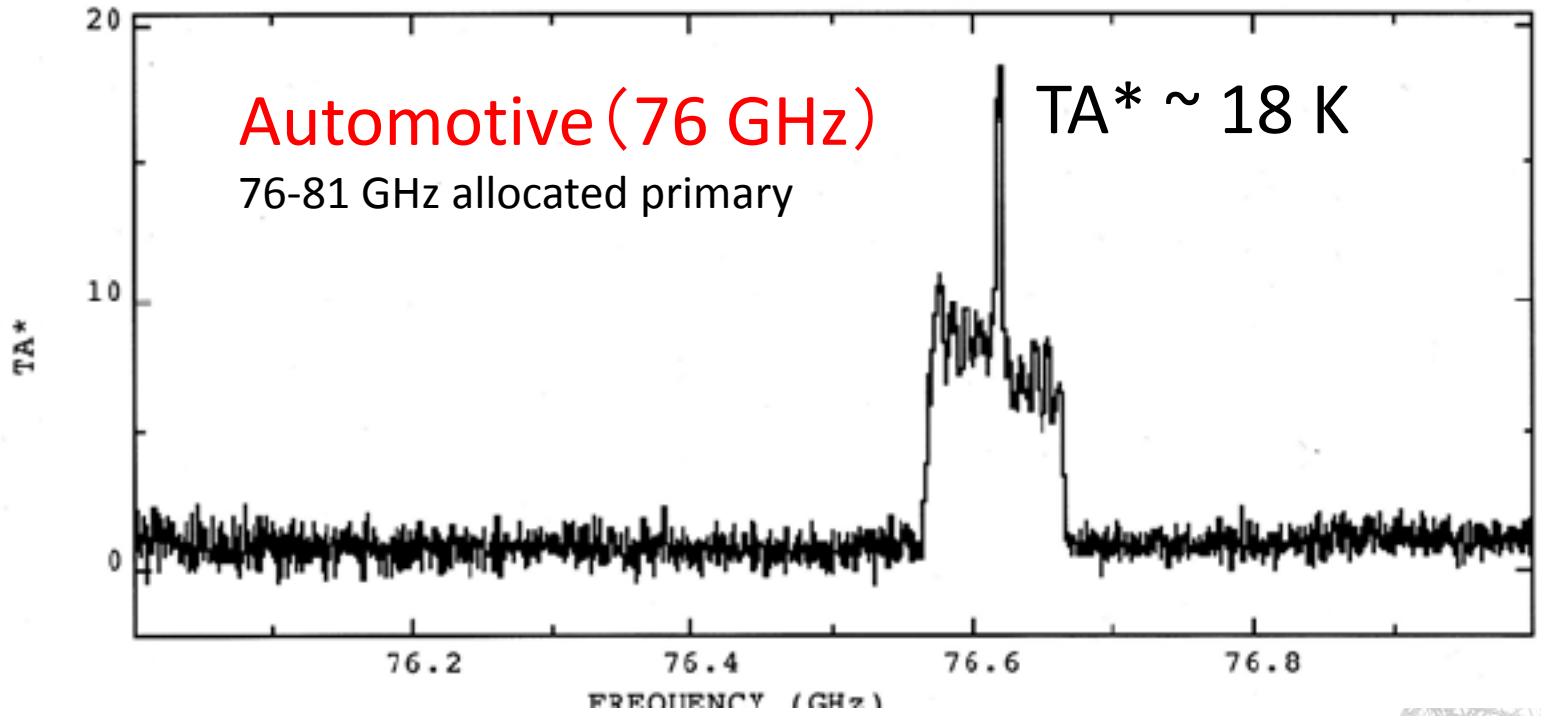
周波数範囲（GHz）	代表的なライン及び注
1.4-1.427	HI
2.69-2.7	(RR第5.422号の条件該当を除く)
15.35-15.4	(RR第5.511号の条件該当を除く)
23.6-24	NH_3 23.694 GHz, 23.723 GHz, 23.870 GHz
31.3-31.5	
86-92	SiO 86.243 GHz, HCN 88.632 GHz
100-102	
109.5-111.8	$C^{18}O$ 109.782 GHz, ^{13}CO 110.201 GHz
114.25-116	CO 115.271 GHz
148.5-151.5	
164-167	
182-185	H_2O 183.310 GHz
190-191.8	
200-209	
226-231.5	CO 230.538 GHz
250-252	

WRC (freq allocation)

- WRC-2015
  - 77.5 – 78.0 GHz for automotive radar
- WRC-2019 (agenda items)
  - IMT: 24.25-27.5, 37-40.5, 42.5-43.5, 45.5-47, 47.2-50.2, 50.4- 52.6, 66-76 and 81-86, 31.8-33.4, 40.5-42.5, 47.2-50.2 GHz
  - Satellite: 17.7-19.7, 37.5-39.5, 39.5-42.5 (dl), 27.5-29.5, 47.2-50.2, 50.4-51.4 (ul)
  - Misc. 275-450 GHz



New Discovery



Following bands on the discussion table in WRC-2019

-10	10-20GHz	20-30GHz	30-40GHz	40-50GHz	50-60GHz	60-70GHz	70-80GHz	80-90GHz
		24.25 27.5	31.8 33.4	37 43.5 45.5	50.2 50.4 52.6	66	76	81 86

NOBEYAMA

国立天文台 NAOJ NINS National Institutes of Natural Sciences

Summary

- Various issues are going in recent years mostly because active service have been pushing to high frequencies (supported by admin).
- WRC-2019 deals with issues potentially killing some of Mizusawa and Nobeyama observatories.
- Check with our URL (to be updated) or contact us if you come across any interference issues.

  http://radio.mtk.nao.ac.jp/freqras/