

ASTROPHYSICS

Academician Paris M. Herouni

Measured Parameters of Large Antenna of ROT-54/2.6 Tell about Absence of Big Bang

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The first in the World Radio-Optical Telescope ROT-54/2.6 was designed and built during 1975-1985 by Radiophysics Research Institute (RRI, Yerevan, Armenia) on territory of RRI Aragats Scientific Centre (ASC, 100 ha) on Mount Aragats (Armenia) at altitude 1700m. The ROT-54/2.6 includes the Radiotelescope with Large Antenna of 54m in diameter and the Optical Telescope with diameter of mirror 2.6m and focus distance of 10m.

The Large Antenna of ROT is the new type [1]. Its Main mirror (54m) is fixed in ground and has hemispheric shape. Using aperture is 32m in diameter (surface using factor 0,6). The spherical aberrations of Main mirror are recompensed by special shape of Secondary (Small) mirror of 5m in diameter, which can rotate around the centre point of Main mirror [2]. On Fig. 1 the rays inside of mirror system are shown.

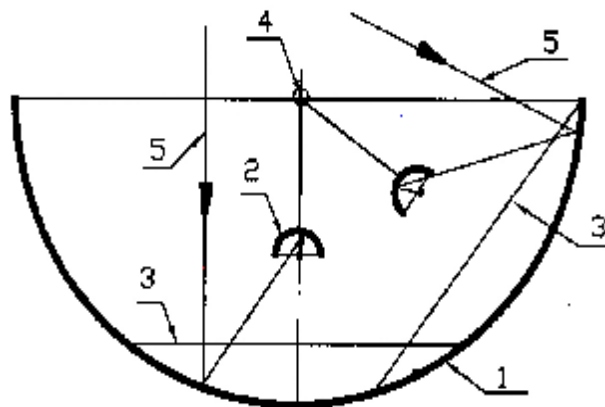


Fig. 1. 1 - Main mirror, 2 - Secondary mirror, 3 - Using aperture, 4 - Centre of sphere, 5 - Rays.

Table 1

The Results of Measurements of ROT Antenna Main Parameters

N	Wavelength, mm	200	30	8	3	2	1
	Parameter						(expected)
1.	Beamwidth	25'	3.7'	1'	22"	14"	7"
2.	Effective Area, m ²	560	560	540	520	482	450
3.	Gain	2x10 ⁵	8x10 ⁶	10 ⁸	7x10 ⁸	1.5x10 ⁹	4.4x10 ⁹
4.	Area using factor	0.7	0.7	0.67	0.65	0.6	0.5
5.	Self Noises, K	5	4	2.6	3	not measured	
6.	Sensitivity (Eff. Area / selfnoises)	112	140	193	173	not measured	
7.	Field of view, square degree	2.8	(±1 0 x 10 beamwidths)			not measured	

Table 2

The ROT Antenna Comparison with the World Other Largest Antennas

Parameter \ Antenna	ROT Armenia	Nobjarna Japan	Pico Veletta Spain	Effelberg German	Aresibo USA	Eypatoria Ukraine	Medvezhji ozero Russia	RATAN 600 Russia
1. The full diameter, m	54	45	30	100	305	70	64	7.4x580
2. Using diameter, m	32	45	30	100	260x213	70	64	7.4x320
3. Using Aperture, geometrical Area, m ²	804	1590	707	7854	43514	3848	3217	2368
4. RMS of mirrors, mm	<u>0.08</u>	0.2	0.13	1.2	7.5	1	1	1
5. Shortest wavelength, (mm) Max. frequency, GHz	<u>2</u> <u>150</u>	3.3 94	3 100	30 10	37 8.1	30 10	30 10	30 10
6. Effective Area factor (at shortest wave)	<u>0.6</u>	0.4	0.4	0.4	0.5	0.4	0.4	0.4
7. Effective Area, m ² (at shortest wave)	482	636	283	3142	21760	1539	1287	947
8. Electrical diam/10 ³ , λ (at shortest wave)	<u>16</u>	14	10	3.3	6.4	2.3	2.1	0.25x11
9. Self-Noise Temper., K	<u>2.6</u>	35	35	40	35	35	35	50
10. Sensitivity, m ² /K (Eft. Area / Self-noise)	<u>185</u>	18	8	79	622	44	37	19
11. Beamwidth, arcsec. (at shortest wave)	<u>14</u>	17	24	72	41x34	103	112	22x900
12. Beam cross (cut) section, arcsec ²	<u>196</u>	289	576	5184	1095	10609	12544	19800
13. Gain /10 ⁶ (at shortest wave)	<u>1514</u>	780	395	44	200	21	18	13
14. Sky coverage, degree	120	120	120	120	22	0150	150	150
15. Latitude, degree	40	36	37	50	18	45	56	44
16. Declination of visible sources, degree	<u>-35</u> <u>+85</u>	-24 +75	-24 +75	-10 +75	+24 +46	-30 +90	-19 +90	-30 +90
17. Sky coverage along source declin., degree	120	99	99	85	22	120	109	120
18. Duration of source observation, hour	8	6.6	6.6	5.7	1.5	8	7.3	8
19. Tracking accuracy, arcsec.	2	2	2	10	10	?	?	?
20. Parallel Optical-Telescope diameter, m	<u>2.6</u>	-	-	-	-	-	-	-

The main advantages of ROT Antenna are the highest accuracy of mirror surfaces (50 micron), shortest wavelength (1mm) and very low level of Self Noises (2,6 K), i.e. highest sensitivity. Parameters of the Antenna were measured mainly in 1985-1990. They are shown in Table 1 and in Table 2 - in compare to parameters of other large antennas in the World.

The first international publication about ROT-54/2.6 was in VI International Conference on AP (ICAP-89), UK [2]. For the mentioned report the author was rewarded by the IEE Diploma, which was given to him at the opening ceremony of the next ICAP-91.

Thanks to high accuracy of ROT Antenna it can work in very short wavelengths, down to 1mm. Due to special optical scheme of the Antenna, the diffraction rays from edges of mirrors do not arrive to the focus point, so Antenna almost not feel surrounding high temperature (about 300 K). So the Self Noises of Antenna is very low, just about 2.6 K or 2.8 K ($\pm 10\%$) in different experiments, where to achieve the high accurate result, the Self Noise Temperature (T_{SN}) was mainly measured at first near the East support leg of Antenna, where there is the bridge, in open position of which it is possible to go to receiver and focus point. The Self Noises measured near bridge were equal $T_{SN}^B = 7.4K$, because here is the diffraction on bridge and leg, which are too close to Secondary mirror aperture. But after moving of Secondary mirror to the zenith looking position, T_{SN} lessens. The scheme of said moving is shown on Fig. 2.

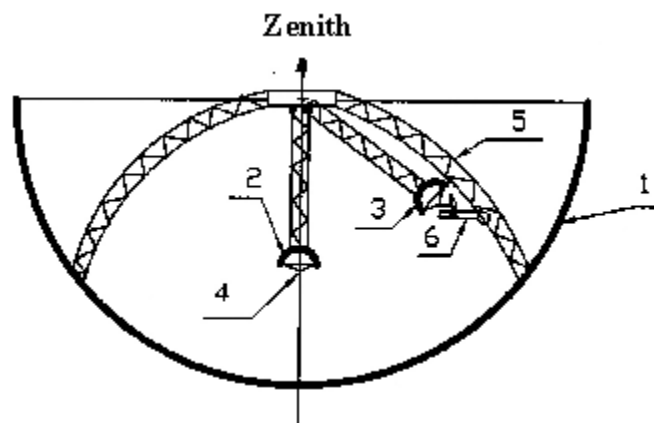


Fig. 2. 1 - Main mirror, 2 - Small mirror, 3 - Small mirror in position of East leg, 4 - Focus, 5 - East leg, 6 - Bridge with man.

The result presented on Fig. 3 introduced more in details the process of ROT Antenna Self Noises measurements which were done mainly in 1988 and later.

Here the Antenna positions during experiment are shown. Measurements were started in position of Small mirror "near the East leg" (or "near bridge"). The folding bridge gives possibility for operator to go to the focus point and receiver in position of Small mirror "near East leg".

Self Noises measurement of Antenna were done usually at first in position "near bridge", then Small mirror (with receiver in focus) starts to go to "zenith position" and measurements were done "on the way" (about 40°) and in position "near zenith".

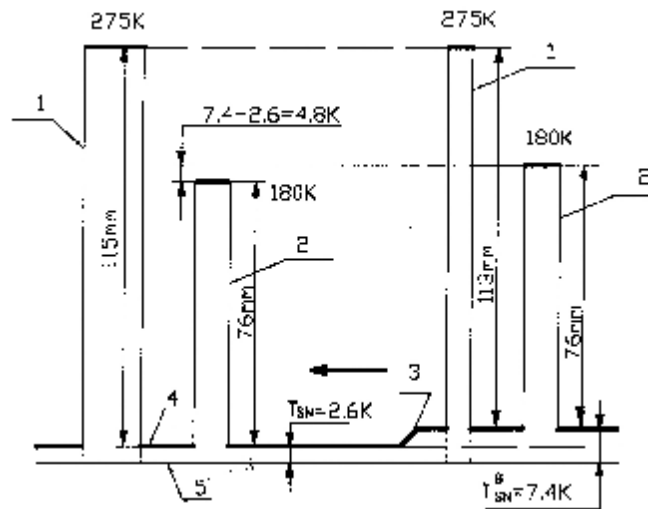


Fig. 3. 1 - Pulses from Matched load, 2 - Pulses from Noise generator, 3 - Start to go to Zenith, 4 - Zero of record, 5 - Absolute 0°K.

On Fig. 3 the copy of record in output of radiometric receiver on wavelength 8 mm is presented. This record took place on 23 and 24 of November 1988, about 23-24 o'clock, when the Sky was clean, the temperature near ground was 0°C (273 K), inside of waveguide (in focus) 2°C (2°C + 273 K = = 275 K), dry air (water evaporation < 30%).

For calibration of radiometric receiver the Noise generator (180 K) and Matched load (275 K) in waveguide input were used. All parts of equipment preliminary were tested with accuracy ±5%. In the result the Antenna Self Noises with accuracy less than ±10 were measured.

In Fig. 3, as at the first one, there is also is shown when the Small mirror was fixed "near bridge", both calibration pulses were recorded. Then the Small mirror started to go to the "near zenith" position and on the way, and also in last position, calibration pulses were again registered. The vertical size of pulses are shown in mm.

In position "near bridge" the Self Noises (T_{SN}^B) of Antenna we can find by proportion (Three step method):

$$\frac{275K - T_{SN}^B}{113mm} = \frac{180K}{76mm};$$

$$20900 - 76T_{SN}^B = 20340; \quad 560 = 76T_{SN}^B;$$

$$\underline{T_{SN}^B = 7.4K}$$

In positions "on the way to zenith" and "zenith" we have the proportion for Antenna Self Noises (T_{SN}):

$$\frac{275K - T_{SN}}{115} = \frac{180K}{76}; \quad 20900 - 76T_{SN} = 20700; \quad 200 = 76T_{SN};$$

$$\underline{\underline{T_{SN} = 2.6K}}$$

On Fig. 4 the views of the ROT-54/2.6 are presented: a) from helicopter, b) Secondary mirror and Optical Telescope, c) at night.

We are keeping the original of these records. In some of them we received $T_{SN} = 2.8$ K, which are in the limits of $\pm 10\%$ accuracy [3, 4].

The next important question is what means so low Self Noises (2,6 K or 2,8 K). According to the theory of the Big Bang in Universe it must have been Relict radiation of 2,7 K.

If it is right, then our measured noises near Zenith had to be $2,6 + 2,7 = 5,3$ K. But they are absent. It is also impossible that our 2,6 K is 2,7 K of Relict. Because it will be only in case, if our Antenna is ideal and its Self Noises are equal 0° K. But it is impossible on Earth.

So there is only one explanation, that Relict radiation is absent in Universe, and it is that there never was any Big Bang [3, 4, 5] in Universe.

Radiophysics Research Institute

Ակադեմիկոս Պարիս Մ. Ներունի

ՌՕԴ-54/2.6 Մեծ Անտենայի չափված բնութագրերը որպես Մեծ Պայթյունի գոյության ժխտման վկայություն

Աշխարհում առաջին Ռադիո-օպտիկական աստղադիտակը (ՌՕԴ-54/2.6) նախագծվել և կառուցվել է 1975-1985 թթ. Ռադիոֆիզիկայի ԳՆԻ-ի (Երևան) կողմից ՌԳՆԻ-ի Արագածի գիտական կենտրոնում, 1700 մ բարձրության վրա: ՌՕԴ-ը ունի անշարժ սֆերիկ ռադիոհայելի՝ 54մ պրամագծով և օպտիկական հայելի՝ 2,6 մ պրամագծով:

Աղ. 1-ում բերված են Ռադիոաստղադիտակի չափված բնութագրերը, իսկ աղ. 2-ում՝ նրանց համեմատությունն աշխարհի այլ մեծագույն անտենաների բնութագրերի հետ, որից երևում է, որ ՌՕԴ-ն ունի ամենաբարձր բնութագրերը:

Նկ. 3-ում բերված է ՌՕԴ-ի սեփական աղմուկների չափման գրանցման օրինակը, որտեղից հերևում է, որ այդ բնութագիրը հավասար է 2.6 K:

Գոյություն ունի փարածված փետություն, որ Տիեզերքը ծնվել է Մեծ Պայթյունի հետևանքով, որից այժմ պևրք է գոյություն ունենա մնացորդային ճառագայթում 2.7 K: Բայց քանի որ ՌՕԴ-ի սեփական աղմուկները 2.6 K են (այլ ոչ թե $2.6 + 2.7 = 5.3$ K), սա ապացուցում է, որ Տիեզերքում մնացորդային ճառագայթում չկա, ինչն իր հերթին ապացուցում է, որ ոչ մի Մեծ Պայթյուն չի եղել:

ՀՀ ԳԱՆՏՆԱԿԱՆ ԳՐԱԿԱՆՈՒԹՅԱՆ ԿԵՆՏՐՈՆԻ ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅԱՆ
ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅԱՆ

Первый в мире Радио-оптический телескоп (РОТ-54/2.6) был спроектирован и построен в НИИ радиофизики (Ереван) в 1975-1985 годах на территории Арагацского научного центра НИИР на высоте 1700 м. РОТ имеет неподвижное сферическое радиозеркало диаметром 54 м и оптическое зеркало диаметром 2.6 м.

В табл. 1 приведены измеренные основные параметры радиотелескопа, а в табл. 2 - сравнение их с параметрами других крупнейших в мире антенн, откуда видно, что РОТ имеет самые высокие показатели.

На рис. 3 приведен пример регистрации на РОТ результатов измерений его собственных шумов, откуда следует, что этот параметр равен 2.6 К.

Согласно распространенной теории Вселенная родилась в результате Большого Взрыва, от которого сейчас должно существовать остаточное излучение величиной в 2.7 К. Но, поскольку собственные шумы РОТ равны 2.6 К (а не $2.6 + 2.7 = 5.3$ К), то это доказывает, что во Вселенной нет остаточного излучения, что в свою очередь свидетельствует о том, что во Вселенной не было никакого Большого Взрыва.

Reference

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