International Journal of Astrobiology

cambridge.org/ija

Planck frequencies as Schelling points in SETI – ERRATUM

Jason T. Wright

DOI: https://doi.org/10.1017/S1473550420000221 Published online by Cambridge University Press: 07 September 2020

Erratum

Cite this article: Wright JT (2020). Planck frequencies as Schelling points in SETI – ERRATUM. *International Journal of Astrobiology* **19**, 515–518. https://doi.org/10.1017/S1473550420000324

The Publisher apologises that due to a typesetting error all instances of μ were rendered as m in Tables 2 and 5, making the units of some entries incorrect by a factor of 10^3.

Additionally, there are missing minus signs in equations (5) and (7) in Tables 2 and 5, as well as in the table notes of Tables 3 and 4. The correct equations are:

$$n_{\hbar,e} = -\ln\left(E/E_P\right) \tag{5}$$

$$n_{h,e} = -\ln\left(E/\sqrt{hc^5/G}\right) \tag{7}$$

The correct tables are as below

Table 2. The Planck frequency comb with $\hbar \rightarrow h$
$n_{h,\alpha} = \log\left(E/\sqrt{hc^5/G}\right)/\log\left(e^2/(ch)\right)$.
This set contains no convenient lines in the optical or near-infrared.

n	Wavelength	Energy/frequency	Notes
0		3.0603×10^{28} eV	
...	...	...	
13		121.13 GeV	Observable by *Fermi*
14		5.5539 GeV	Observable by *Fermi*
15		254.65 MeV	Observable by *Fermi*
16		11.676 MeV	Observable by *Fermi*
17		535.35 keV	Observable by *Fermi*
18		24.546 keV	Observable by *Fermi*
19	11.016 Å	1.1254 keV	Observable by *Chandra*
20	240.27 Å	51.602 eV	
21	5240.2 Å	2.366 eV	Observable by *Swift*
22	11.429 μ	26.231 THz	Observable by *JWST*
23	249.26 μ	1.2027 THz	
24	5.4364 mm	55.145 GHz	Microwave U band
25	11.857 cm	2.5284 GHz	Microwave S band
26	2.586 m	115.93 MHz	Observable by EoR experiments
27	56.4 m	5.3155 MHz	Ionospheric cut-off
28		243.72 kHz	
29		11.175 kHz	
30		512.36 Hz	In the frequency range of LIGO
31		23.492 Hz	In the frequency range of LIGO
32		1.0771 Hz	
33		49.387 mHz	In the frequency range of LISA
34		2.2644 mHz	In the frequency range of LISA
35		103.83 mHz	In the frequency range of LISA
36		4.7605 mHz	
37		218.27 nHz	In the frequency range of PTAs
38		10.008 nHz	In the frequency range of PTAs
39		0.45886 nHz	

© The Author(s), 2020. Published by Cambridge University Press

Table 3. The Planck frequency comb with $\hbar \rightarrow h$ and base e $n_{h,e} = -\ln(E/\sqrt{hc^5/G})$.

n	Wavelength	Energy/frequency	Notes
0		3.0603×10^{28} eV	
…	…	…	
39		353.41 GeV	
40		130.01 GeV	Observable by *Fermi*
41		47.829 GeV	Observable by *Fermi*
42		17.595 GeV	Observable by *Fermi*
43		6.473 GeV	Observable by *Fermi*
44		2.3813 GeV	Observable by *Fermi*
45		876.02 MeV	Observable by *Fermi*
46		322.27 MeV	Observable by *Fermi*
47		118.56 MeV	Observable by *Fermi*
48		43.615 MeV	Observable by *Fermi*
49		16.045 MeV	Observable by *Fermi*
50		5.9026 MeV	Observable by *Fermi*
51		2.1714 MeV	Observable by *Fermi*
52		798.83 keV	Observable by *Fermi*
53		293.87 keV	Observable by *Fermi*
54		108.11 keV	Observable by *Fermi*
55		39.771 keV	Observable by *Fermi*
56		14.631 keV	Observable by *Fermi*
57	2.3035 Å	5.3825 keV	Observable by *Chandra*
58	6.2615 Å	1.9801 keV	Observable by *Chandra*
59	17.021 Å	728.44 eV	Observable by *Chandra*
60	46.267 Å	267.98 eV	Observable by *Chandra*
61	125.77 Å	98.583 eV	
62	341.87 Å	36.267 eV	
63	929.29 Å	13.342 eV	
64	2526.1 Å	4.9082 eV	Observable by *Swift*
65	6866.6 Å	1.8056 eV	Optical
66	1.8665 μ	160.61 THz	Infrared H band
67	5.0738 μ	59.087 THz	Observable by *JWST*
68	13.792 μ	21.737 THz	Observable by *JWST*
69	37.49 μ	7.9965 THz	Infrared Z band
70	101.91 μ	2.9418 THz	
71	277.02 μ	1.0822 THz	
72	753.01 μ	398.12 GHz	Observable with ALMA
73	2.0469 mm	146.46 GHz	Observable with ALMA
74	5.5641 mm	53.88 GHz	Microwave U band
75	1.5125 cm	19.821 GHz	Microwave K band
76	4.1113 cm	7.2919 GHz	Microwave C band
77	11.176 cm	2.6825 GHz	Microwave S band
78	30.379 cm	986.85 MHz	
79	82.578 cm	363.04 MHz	
80	2.2447 m	133.56 MHz	Observable by EoR experiments
81	6.1017 m	49.132 MHz	Observable by EoR experiments
82	16.586 m	18.075 MHz	
83	45.086 m	6.6493 MHz	Ionospheric cut-off
84	122.56 m	2.4462 MHz	
85	333.14 m	899.89 kHz	
86	905.58 m	331.05 kHz	
87		121.79 kHz	
88		44.803 kHz	
89		16.482 kHz	
90		6.0634 kHz	In the frequency range of LIGO
91		2.2306 kHz	In the frequency range of LIGO
92		820.59 Hz	In the frequency range of LIGO
93		301.88 Hz	In the frequency range of LIGO
94		111.06 Hz	In the frequency range of LIGO
95		40.855 Hz	In the frequency range of LIGO
96		15.03 Hz	In the frequency range of LIGO
97		5.5291 Hz	
98		2.0341 Hz	
99		748.29 mHz	
100		275.28 mHz	
101		101.27 mHz	
102		37.255 mHz	In the frequency range of LISA
103		13.705 mHz	In the frequency range of LISA
104		5.0419 mHz	In the frequency range of LISA
105		1.8548 mHz	In the frequency range of LISA
106		682.35 μHz	In the frequency range of LISA
107		251.02 μHz	In the frequency range of LISA
108		92.346 μHz	
109		33.972 μHz	
110		12.498 μHz	
111		4.5976 μHz	
112		1.6914 μHz	
113		622.22 nHz	In the frequency range of PTAs
114		228.9 nHz	In the frequency range of PTAs
115		84.208 nHz	In the frequency range of PTAs
116		30.979 nHz	In the frequency range of PTAs
117		11.396 nHz	In the frequency range of PTAs
118		4.1925 nHz	In the frequency range of PTAs
119		1.5423 nHz	In the frequency range of PTAs
120		0.56739 nHz	

https://doi.org/10.1017/S1473550420000324 Published online by Cambridge University Press

Table 4. The Planck frequency comb with base e $n_{\hbar,e} = -\ln(E/E_P)$.

n	Wavelength	Energy/frequency	Notes
0		1.2209×10^{28} eV	Planck energy
…	…	…	
39		140.99 GeV	Observable by *Fermi*
40		51.868 GeV	Observable by *Fermi*
41		19.081 GeV	Observable by *Fermi*
42		7.0195 GeV	Observable by *Fermi*
43		2.5823 GeV	Observable by *Fermi*
44		949.99 MeV	Observable by *Fermi*
45		349.48 MeV	Observable by *Fermi*
46		128.57 MeV	Observable by *Fermi*
47		47.297 MeV	Observable by *Fermi*
48		17.4 MeV	Observable by *Fermi*
49		6.401 MeV	Observable by *Fermi*
50		2.3548 MeV	Observable by *Fermi*
51		866.28 keV	Observable by *Fermi*
52		318.69 keV	Observable by *Fermi*
53		117.24 keV	Observable by *Fermi*
54		43.13 keV	Observable by *Fermi*
55		15.866 keV	Observable by *Fermi*
56	2.1241 Å	5.8369 keV	Observable by *Chandra*
57	5.774 Å	2.1473 keV	Observable by *Chandra*
58	15.695 Å	789.94 eV	Observable by *Chandra*
59	42.664 Å	290.6 eV	Observable by *Chandra*
60	115.97 Å	106.91 eV	Observable by *Chandra*
61	315.25 Å	39.329 eV	
62	856.93 Å	14.468 eV	
63	2329.4 Å	5.3226 eV	Observable by *Swift*
64	6331.9 Å	1.9581 eV	Optical
65	1.7212 μ	174.18 THz	Infrared H band
66	4.6787 μ	64.076 THz	Observable by *JWST*
67	12.718 μ	23.572 THz	Observable by *JWST*
68	34.571 μ	8.6717 THz	Infrared Z band
69	93.974 μ	3.1902 THz	
70	255.45 μ	1.1736 THz	
71	694.38 μ	431.74 GHz	Observable with ALMA
72	1.8875 mm	158.83 GHz	Observable with ALMA
73	5.1308 mm	58.43 GHz	Microwave U band
74	1.3947 cm	21.495 GHz	Microwave K band
75	3.7912 cm	7.9076 GHz	Microwave C band
76	10.306 cm	2.909 GHz	Microwave S band
77	28.013 cm	1.0702 GHz	Microwave L band
78	76.148 cm	393.7 MHz	
79	2.0699 m	144.83 MHz	Observable by EoR experiments
80	5.6266 m	53.281 MHz	Observable by EoR experiments
81	15.295 m	19.601 MHz	
82	41.575 m	7.2108 MHz	Ionospheric cut-off
83	113.01 m	2.6527 MHz	
84	307.2 m	975.88 kHz	
85	835.07 m	359 kHz	
86		132.07 kHz	
87		48.586 kHz	
88		17.874 kHz	
89		6.5754 kHz	In the frequency range of LIGO
90		2.419 kHz	In the frequency range of LIGO
91		889.88 Hz	In the frequency range of LIGO
92		327.37 Hz	In the frequency range of LIGO
93		120.43 Hz	In the frequency range of LIGO
94		44.305 Hz	In the frequency range of LIGO
95		16.299 Hz	In the frequency range of LIGO
96		5.996 Hz	
97		2.2058 Hz	
98		811.47 mHz	
99		298.52 mHz	
100		109.82 mHz	
101		40.401 mHz	In the frequency range of LISA
102		14.863 mHz	In the frequency range of LISA
103		5.4676 mHz	In the frequency range of LISA
104		2.0114 mHz	In the frequency range of LISA
105		739.96 μHz	In the frequency range of LISA
106		272.22 μHz	In the frequency range of LISA
107		100.14 μHz	In the frequency range of LISA
108		36.841 μHz	
109		13.553 μHz	
110		4.9858 μHz	
111		1.8342 μHz	
112		674.76 nHz	In the frequency range of PTAs
113		248.23 nHz	In the frequency range of PTAs
114		91.319 nHz	In the frequency range of PTAs
115		33.594 nHz	In the frequency range of PTAs
116		12.359 nHz	In the frequency range of PTAs
117		4.5465 nHz	In the frequency range of PTAs
118		1.6726 nHz	In the frequency range of PTAs
119		0.6153 nHz	

https://doi.org/10.1017/S1473550420000324 Published online by Cambridge University Press

Table 5. The Rydberg frequency comb $n_R = \log_\alpha (E/(m_e c^2/2))$.

n	Wavelength	Energy/frequency	Notes
− 2		4.798 GeV	Observable by *Fermi*
− 1		35.013 MeV	Observable by *Fermi*
0		255.5 keV	Observable by *Fermi*
1	6.6498 Å	1.8645 keV	Observable by *Chandra*
2	911.27 Å	13.606 eV	Rydberg
3	12.488 μ	24.007 THz	Observable by *JWST*
4	1.7113 mm	175.19 GHz	Observable with ALMA
5	23.45 cm	1.2784 GHz	Microwave L band
6	32.135 m	9.329 MHz	
7		68.077 kHz	
8		496.78 Hz	In the frequency range of LIGO
9		3.6252 Hz	
10		26.454 mHz	In the frequency range of LISA
11		193.05 μHz	In the frequency range of LISA
12		1.4087 μHz	
13		10.28 nHz	In the frequency range of PTAs

Reference

Wright JT (2020) Planck frequencies as Schelling points in SETI. *International Journal of Astrobiology* 1–10. doi: 10.1017/S1473550420000221.

https://doi.org/10.1017/S1473550420000324 Published online by Cambridge University Press