Gravitational Field Intensity and Shifting of Waves

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ABSTRACT

The celestial bodies like the sun, stars, etc., are the owner of higher gravitational field intensity areas and the source of various kinds of waves. Waves rush from higher gravitational field intensity areas like the sun to lower gravitational field intensity areas like the earth. This paper, finding out that the wave exchanges some force during traveling from the sun to the ground. Every wave has a frequency and each frequency of a wave has two parts, crest and trough and both together is a complete single frequency.

Keywords: Generate, Crest, Trough, Frequency, Fraction.

INTRODUCTION

As we know every frequency of a wave contains two parts, one is a crest, and the other is a trough (Fig 1). A wave occurs due to some disturbances in the gravitational field (Palchoudhury, 2020). It is clear that, a complete wave has two steps-one is a crest, and the other is a trough. Only on a crest or a trough, a wave is a incomplete wave and cannot move forward. Counting of frequency is depends on every complete wave. So, the frequency cannot be less than one and fraction.The gravitational field is always quiet and waves are less, if disturbance does not arise. We may define the nature of a wave as follows as a man walks, first, right step and next, left step, and both measures together is a complete walk. So, a wave moves the first crest and next, trough and both together is an entire wave. Crest and trough, both together is a wave as well as a number of frequency.

A man cannot move only on either right step or left step that is a fraction step. A wave cannot move only on either crest or trough that is a fraction of a wave. A complete cycle is a complete frequency. Frequency must be an integer number, not fraction. A person walks at different lengths with the parity of their height and power. Same, a wave moves with the parity of the wavelength, height (amplitude) and power. Number of frequency cannot be less than one. According to the velocity of light, the wavelength of a wave even gravitational wave cannot be longer than light velocity(c).

The wave propagates in the gravitational field depending on the gravitational field intensity. The shifting of wavelength, amplitude, frequency and power of a wave is depends on the gravitational field intensity (Palchoudhury, 2020).
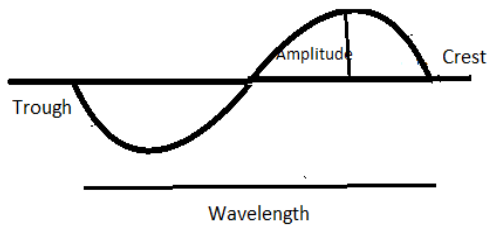

Fig.1 Wave frequency

WAVES SHIFTING

Waves run from the higher gravitational field intensity area to reduce intensity area. When waves rush from higher intensity to lower intensity area, then waves lose some force in this propagation (Table 1). According to the Palchoudhury Wave theory (Palchoudhury, 2020), massive and heavy celestial bodies like the sun, stars, etc., are the owner of a higher gravitational field intensity area. Massive stars (like sun and etc.) are the source of the various kinds of waves. Waves rush from higher gravitational field intensity areas (like the sun) to lower gravitational field intensity areas (like earth). And waves exchange some force during propagation. The waves travel from higher gravitational field intensity areas to decline, and then waves lose some power (see Table1).

Common primary data of various waves, for example, the wavelength range of color red (~ 625 -740 nm), orange (~ 590 - 625 nm), yellow (~ 565 - 590 nm), green (~ 500 - 565 nm), blue (~ 450 - 485 nm), violet (~ 380 - 450 nm), Infrared wave (~ 750 nm -1 mm), Band wave (~ 1260 - 1675 nm), Radio wave (1 m - 100 km), Microwave (~ 1 mm - 1 m), Ultraviolet wave (~ 10 - 400 nm), X-ray wave (~ 0.01 - 10 nm), Original Band (~ 1260 - 1360), Extended Band (~ 13660 - 1460), Short length Band (~ 1460 - 1530), Conventional Band (~ 1530 - 1565), Long-wavelength Band (~ 1565 - 1625), Ultra long wavelength Band (~ 1625 - 1675 nm) and Gamma-ray (~ < 10^{-11} m). (NCERTS) And data verify in calculators-Length Converter, Convert Electron-volt to Newton Meter, Energy converter and use in the tables.

Table.1 Various Waves and its local area force per second

Different Wave	Unit Wave			f	Local Area Force at		Waves lose force at Earth (Sun – Earth)
	λ	$\dot{A}$	F		Sun	Earth	
Red	6.86E-07	2.42E-07	6.64E-34	4.37E+14	8.11E-18	2.90E-19	7.82E-18
Orange	6.10E-07	2.15E-07	6.62E-34	4.91E+14	9.10E-18	3.26E-19	8.78E-18
Yellow	5.80E-07	2.05E-07	6.64E-34	5.17E+14	9.60E-18	3.43E-19	9.26E-18
Green	5.47E-07	1.93E-07	6.64E-34	5.48E+14	1.02E-17	3.64E-19	9.81E-18
Blue	4.78E-07	1.68E-07	6.62E-34	6.27E+14	1.16E-17	4.15E-19	1.12E-17
Violet	4.27E-07	1.50E-07	6.63E-34	7.02E+14	1.30E-17	4.65E-19	1.25E-17
Near Infrared	9.60E-07	3.38E-07	6.62E-34	3.12E+14	5.78E-18	2.07E-19	5.57E-18
Short Wavelength IR	2.00E-06	7.04E-07	6.63E-34	1.50E+14	2.78E-18	9.93E-20	2.68E-18
Mid Wavelength IR	5.00E-06	1.76E-06	6.63E-34	6.00E+13	1.11E-18	3.97E-20	1.07E-18
Long Wavelength IR	1.20E-05	4.23E-06	6.62E-34	2.50E+13	4.63E-19	1.66E-20	4.46E-19
Far Infrared	2.00E-04	7.05E-05	6.63E-34	1.50E+12	2.78E-20	9.93E-22	2.68E-20
Radio	1.50E+02	5.29E+01	6.63E-34	2.00E+06	3.71E-26	1.33E-27	3.57E-26
Microwave	5.00E-02	1.76E-02	6.63E-34	6.00E+09	1.11E-22	3.97E-24	1.07E-22
Ultra violate-A	3.80E-07	1.34E-07	6.63E-34	7.89E+14	1.46E-17	5.23E-19	1.41E-17
Ultra violate – B	3.00E-07	1.06E-07	6.63E-34	9.99E+14	1.85E-17	6.62E-19	1.79E-17
Ultra violate – C	1.60E-07	5.64E-08	6.63E-34	1.87E+15	3.47E-17	1.24E-18	3.35E-17
X-ray	1.00E-09	3.52E-10	6.63E-34	3.00E+17	5.56E-15	1.99E-16	5.36E-15
Original Band	1.31E-06	4.60E-07	6.63E-34	2.30E+14	4.26E-18	1.52E-19	4.10E-18
Extended Band	1.40E-06	4.92E-07	6.63E-34	2.15E+14	3.98E-18	1.42E-19	3.84E-18
Short wavelength Band	1.48E-06	5.20E07	6.63E-34	2.03E+14	3.77E-18	1.35E-19	3.63E-18
Conventional Band	1.54E-06	5.42E-07	6.63E-34	1.95E+14	3.61E-18	1.29E-19	3.48E-18
Long wave length Band	1.60E-06	5.64E-07	6.63E-34	1.87E+14	3.47E-18	1.24E-19	3.35E-18
Ultra long Wave Band	1.66E-06	5.85E-07	6.63E-34	1.81E+14	3.35E-18	1.20E-19	3.23E-18
Gamma ray	8.00E-12	2.81E-12	6.63E-34	3.75E+19	6.95E-13	2.48E-14	6.71E-13
Gravitational Wave	2.99E+08	1.03E+08	6.48E-34	1.00E+00	1.81E-32	6.48E-34	1.75E-32

As we know a black hole is a massive celestial body but it is not a source of waves. Because its gravitational field intensity is too high so that nothing can make a disturbance in its gravitational field and therefore generating waves and so cannot provide waves. In this case, waves cannot spread outwards from their region as well as take entrance into it. Therefore black holes itself is not the source of waves in such a high gravitational field intensity area. Power of an external wave is not enough to make a disturbance for creating waves in such a high gravitational field intensity area.

NGC-205, Constellation-Andromeda, mass in solar unit is $(9 \times 10^4)M_{\odot}$, and with distance $2.3 \times 10^6\ ly$. (Howley et al., 2008)Spiral galaxy M33 is located in the triangle-shaped constellation Triangulum, earning it the nickname the Triangulum galaxy. About half the size of our Milky Way galaxy, M33 is the third-largest member of our Local Group of galaxies following the Andromeda galaxy (M31) and the Milky Way. Messier-33 mass is about $5 \times 10^4 M_{\odot}$ and distance $2.6 \times 10^6\ ly$ (NASA, 2019).

Sagittarius A* (Sgr A*) is a bright and very compact astronomical radio source at the Galactic Center of the Milky Way. It is located near the border of the constellations Sagittarius and Scorpius, about 5.6° south of the ecliptic. Sagittarius A* is the location of a supermassive black hole. The mass of Sgr A* in solar mass approximately is about $\sim 4.6 \times 10^6 M_{\odot}$ and distance $2.7 \times 10^4\ ly$ (NASA, 2013; Sten, 2019).

Gravitational field intensity (GFI) of the sun approximately is 28 times greater than the earth. In comparison to the earth's GFI, we can state, the GFI of the black hole is the multiplication of 28 with a solar mass of black hole.

So, the GFI of black holes like NGC-205 is 2.52×10^5. For Messier-33 it is about 1.4×10^6 and for SgrA is 1.29×10^8 times greater than the earth. External and internal power is not enough to make a disturbance for generating waves in the higher gravitational field intensity area of black holes seen in table-II. So, waves cannot spread outwards from it as well as take entrance on it.

<div align="center">Table.2 Power of Black Holes</div>

Colours	Force (P) retain at earth	Power require to generate waves in the local area of the Black Holes					
		NGC-205		Messier-33		SgrA	
		R	*P*	*R*	*P*	*R*	*P*
Red	2.90E-19	2.52E+05	7.31E-14	1.40E+06	4.06E-13	1.29E+08	3.74E-11
Orange	3.25E-19	2.52E+05	8.20E-14	1.40E+06	4.55E-13	1.29E+08	4.19E-11
Yellow	3.43E-19	2.52E+05	8.64E-14	1.40E+06	4.80E-13	1.29E+08	4.42E-11
Green	3.64E-19	2.52E+05	9.17E-14	1.40E+06	5.09E-13	1.29E+08	4.68E-11
Blue	4.15E-19	2.52E+05	1.05E-13	1.40E+06	5.81E-13	1.29E+08	5.34E-11
Violate	4.65E-19	2.52E+05	1.17E-13	1.40E+06	6.50E-13	1.29E+08	5.98E-11

Here R, is the ratio between the black and the gravitational field intensity and P is power. To make a disturbance for generating waves in black hole said above, power requires 10^5 to 10^8 times more than the earth. Due to the lack of enormous power, waves are not available in black holes.

CONCLUSION

Waves rush from higher gravitational field intensity areas like the sun to lower gravitational field intensity areas like the earth. And waves lose some force in this travel. It is most important findings that the length of a wave, even gravitational waves, cannot be more than light velocity (c) the frequency cannot be less than $1\ Hz$ or fraction per second.

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