Journal of Physics and Astronomy

Commentary|Vol 10 Iss 10

Impact of the Temperature of Stars on their Redshift

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Received date: 20-October-2022, Manuscript No. tspa-22-77671; **Editor assigned:** 22-October-2022, PreQC No. tspa-22-77671 (PQ); **Reviewed:** 26-October -2022, QC No. tspa-22-77671 (Q); **Revised:** 3-November-2022, Manuscript No. tspa-22-77671 (R); **Published:** 5-November -2022, DOI. 10.37532/2320–6756.2022.10(10).305

Abstract

We report a positive correlation (0.914384) between the possibility of finding unexpected high Redshift (Z>0.001) and the average temperature of nearby stars in different categories. The paper uses SIMBAD Astronomical Database for analyzing information of 58,916 nearby stars. The study shows that as the temperature of stars rises, the chance of finding stars with the unexpected high Redshift will be increased more than 43 times, especially around 10,000 K. The average temperature and average Redshift of 58,717 stars are equal to the 6,346 K and 9.73353E-05. On the other hand, the average temperature and average Redshift of 199 stars with high Redshift are equal to the 9,771 K and 0.453568. We cannot describe the high Redshift of all massive stars by gravitational Redshift because there are many supermassive objects with low Redshift. Hence, the relationship between the temperature and the unexpected high Redshift of stars questions expansion of space theory, gravitational Redshift, and the Hubble constant.

Keywords: ***Unexpected redshift; Expansion of space; Temperature of star; Gravitational redshift***

Introduction

Doppler Effect, gravitational Redshift, and expansion of space theory have been used for describing the Redshift by astronomers [1-3]. They have used the shift in spectral lines of the electromagnetic waves and decreasing the energy of them for studying the universe. Redshift is known by name of Edwin Hubble, who proposed more distance objects move away with more velocity [4]. This theory is known as Hubble's law and explains that Redshift will be increased by increasing the distance of stars, and indirectly implies that the universe is expanding.

Although the expansion of space theory cannot describe blue shift, scientists have accepted that it is because of the Doppler Effect. Also, they believe that in the local objects area, because of the gravity between the objects, expansion of space does not increase the distances.

However, using SIMBAD Astronomical Database, we have found a list of nearby stars whose Redshift is too high [5]. The unexpected high Redshift of these stars question Hubble's law and expansion of space theory. For instance, while the average Redshift of the 58,717 nearby stars is equal to 9.73353E-05, the Redshift of the 41 stars is more than 1. Expansion of space theory cannot describe the nature of unexpected Redshift stars. On the other hand, for describing these phenomena with the Doppler effect we have a problem. SIMBAD Astronomical Database has calculated radial velocity of the “KUV 03292+0035” is equal to 259,326 km/s while its Redshift is equal to 2.71708 at the distance 9.0273 (mas).

According to the Doppler Effect and high radial velocity of these stars that are almost equal to the speed of light, we have two options. If the star belongs to the binary stars, it moves on a circular orbit. Hence, we should detect changes in its Redshift even to the high blue shift along the time. If the star is moving away alone, we should detect its new distance. Neither change in the blue shift nor increasing the distance of these stars not reported [6].

Citation: Kalhor B. Impact of the temperature of stars on their Redshift. 2022;10(11):305.

On the other hand, using gravitational Redshift for describing the high Redshift of these stars is not enough. There are many massive stars with low Redshift. For instance, the mass of Alpha Camelopardalis is more than 30 times of the sun while its Redshift is equal to 0.000033. **TABLE 1** shows a short list of supper massive objects with low Redshift.

TABLE 1. **Supper massive object with low Redshift**

Name	Mass	Redshift	Temperature(K)	References
Alpha Camelopardalis	30.9 $M_{\odot}$	0.000033	30,000	http://simbad.u-strasbg.fr/simbad/sim-id?Ident=alpha+camelopardalis https://en.wikipedia.org/wiki/Alpha_Camelopardalis
HD 93403	68.5 $M_{\odot}$	-0.000049	39,300	http://simbad.u-strasbg.fr/simbad/sim-id?Ident=HD+93403 https://en.wikipedia.org/wiki/HD_93403
HD 93205	40-60 $M_{\odot}$	0.000012	51,300	http://simbad.u-strasbg.fr/simbad/sim-id?Ident=HD+93205 https://en.wikipedia.org/wiki/HD_93205
Gamma Velorum	9 $M_{\odot}$	0.000067	35,000	http://simbad.u-strasbg.fr/simbad/sim-id?Ident=HD+68243 https://en.wikipedia.org/wiki/Gamma_Velorum

In this paper, we try to find a relationship between the temperature and the unexpected high Redshift of the nearby stars. We have used SIMBAD’s TAP service for extracting the temperature of the stars. We have excluded data records with a temperature equal to 1. Also, we have used the average temperatures of the stars [7].

We have found that there is a positive correlation between temperature and chance of finding unexpected high Redshift specially between the 10,000 K and 12,000 K.

Special Temperatures and Unexpected High Redshifts

TABLE 2 shows nearby stars with the highest Redshift. Column 1 is the name of the stars, column 2 is the Redshift of the stars, column 3 is the temperature, and column 4 is the distance of the stars [8]. The table.2 is sorted descending on the Redshift of the stars at column 2.

TABLE 2. **Lit of top high Redshift nearby stars and their temperature.**

Star Name	Z	Temperature (K)	Parallax (mas)
LSPM J1247+0646	3.63758	5650	19.0575
SDSS J154213.47+034800.4	2.73313	15667.5	6.8147
EGGR 561	2.72013	14776	18.3113
KUV 03292+0035	2.71708	26687	9.02
SDSS J083226.57+370955.4	2.267	10089	8.4573
SDSS J083011.35+383940.4	2.255	10113	9.302
SDSS J213507.72-071655.6	2.25331	6714.5	7.9122
PHL 1266	2.24238	10362	6.0652
SDSS J010442.19-084343.9	2.23809	10098	8.0034
SDSS J135205.59+514930.5	2.23562	10089	8.9041
SDSS J231629.37-093845.6	2.20085	10082	10.1275
SDSS J222629.42+004254.1	2.19833	10208.5	6.6263
SDSS J090051.91+033149.3	2.18855	10098	8.6037
LP 708-404	2.17845	10082	13.9743
PB 6723	1.79766	10173.5	8.3065
SDSS J100817.03+434931.7	1.76419	11946	6.8441
SDSS J130144.99+615126.0	1.74365	40678	1.3244
SDSS J033218.22-003722.1	1.55488	10289.75	9.0397
SDSS J012532.03+135403.7	1.55168	6877	6.2755
SDSS J215759.09+113730.1	1.55068	10296.5	6.5814
LP 612-5	1.54233	6329	20.988
WD 0848+159	1.48972	5747	10.4037
PB 5130	1.32995	11678.5	8.3035
SDSS J000054.38-090807.6	1.09969	10110	6.7805
SDSS J091316.85+191345.4	1.098	8775	7.9499
SDSS J081457.55+343744.9	1.09393	8821	14.6875
[CDK2003] S-16	1.0838	10096	8.8904

SDSS J013358.23-094229.3	1.0781	10108	5.7386
SDSS J074204.78+434835.7	1.07725	10098	7.1639
SDSS J170927.55+622901.5	1.07541	10090	6.5754
SDSS J085443.33+350352.7	1.07476	4550	18.6348
SDSS J031615.10+004716.0	1.07475	8247	9.0697
SDSS J111504.50+013203.6	1.07434	6949.5	8.5223
SDSS J075000.58+253812.3	1.07157	10098	14.5728
SDSS J165538.51+372247.1	1.07079	10255.8	6.7888
SDSS J215135.01+003140.2	1.06567	10200	12.6226
SDSS J221955.26+135344.2	1.06412	10088	10.1458
SDSS J124310.83+613207.9	1.06223	10087	7.5599
SDSS J072147.38+322824.1	1.06063	11148	7.0797
SDSS J083736.59+542758.4	1.0606	7590	10.9373
SDSS J234132.83-010104.5	1.05755	10153	8.1581

Briefly, there is no relationship between Redshift and the temperature of the stars. But if we sort them according to the temperature, we could find that most of them could be divided into two individual categories [9]. The first category includes temperatures almost 6,600 K, and the second category includes stars with temperatures around 10,000 K. **FIG.1** illustrates the distribution of unexpected high Redshift nearby stars according to their temperature. Also, **FIG.2** illustrates the distribution of the highest Redshift stars between 4,000 and 12,000 K.

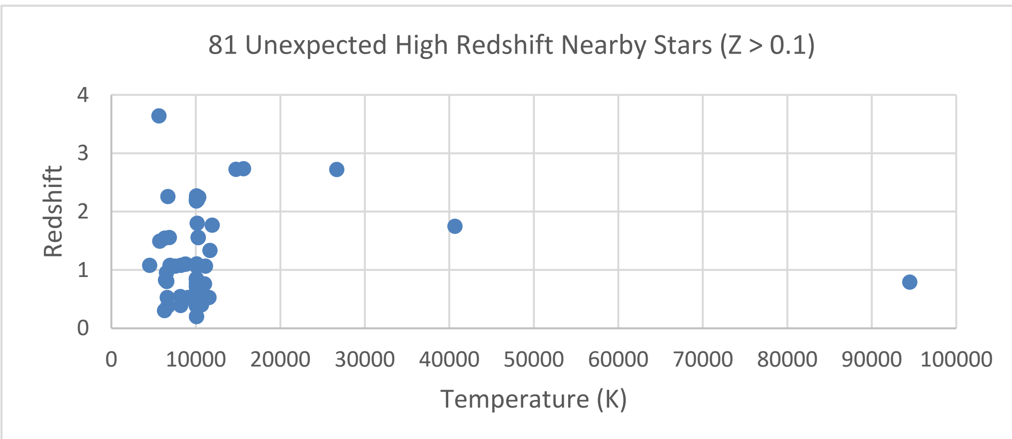

FIG.1 **Distribution of 81 high Redshift nearby stars around the special temperatures.**

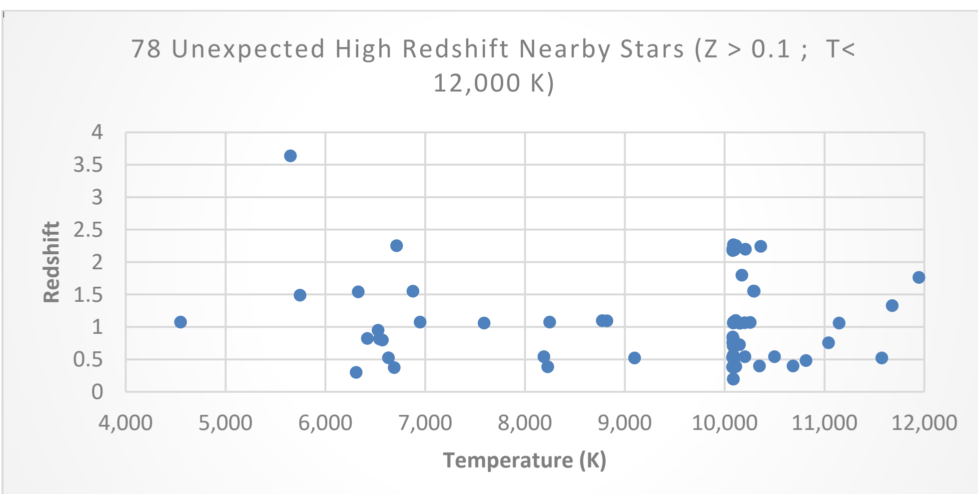

FIG.2 **Distribution of 78 high Redshift nearby stars between 4000 and 14000 K**

Obviously, around the 10,000 K there is a high chance to find unexpected high Redshift stars.

TABLE 3 shows the possibility of finding unexpected high Redshift stars in the special range of temperatures [10]. In the **TABLE 3**, column 1 is the range of temperature, column 2 is the average temperature of column 1, column 3 is the number of the stars, whose temperature belongs to the range of temperature, column 4 is the number of stars whose Redshift is higher than 0.001, column 5 is the percentage of the unexpected high Redshift stars in the range, and column 6 is the average Redshift of the highest Redshift stars in column 4.

TABLE 3. **Percentage of possibility of finding unexpected high redshift in the different temperature**

Temperature (K)	Average Temperature (K)	Number of stars	Number of unexpected Redshift (z>0.001)	Percentage of unexpected Redshift (z>0.001)	Average
Less than 4000	2000	5555	26	0.46	0.00247
4000-6000	5000	40438	44	0.1	0.142236
6000-8000	7000	11248	32	0.28	0.380348
8000-10000	9000	945	8	8.4	0.59005
10000-12000	11000	387	66	17.05	0.853342
Greater than 12000	15000	1161	23	1.981	0.46632

Acknowledgment

This research has made use of the SIMBAD database, operated at CDS, Strasbourg, France 2000,A&AS,143,9 , "The SIMBAD astronomical database",

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