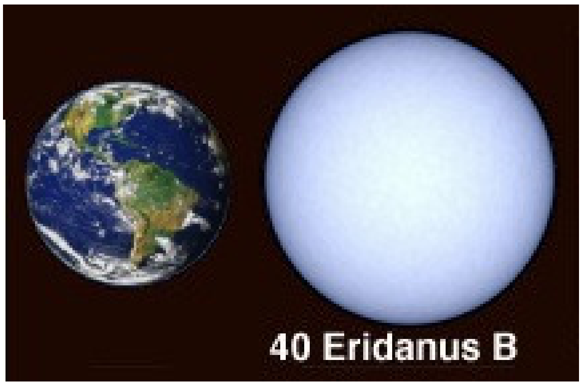
Stellar Metamorphosis: What are White Dwarf Stars?



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April 2, 2019
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Abstract: This is en exploratory paper about White Dwarf stars, are we sure we know what they are? The standard astronomy explanation is questioned and replaced with the position of White Dwarf stars in Stellar Metamorphosis[1]. A main characteristic of these stars is changed.

In standard astronomy White Dwarf stars have a special place first and foremost because they are very dim stars, this is what set them apart from normal stars that all shine bright. The first ever discovered white dwarf star (WD) is 40 Eridani B by William Herschel in 1783, but at that time it was just the discovery of the binary pair 40 Eridani B and C around 40 Eridina A. Only in 1910 was 40 Eridani B named a white dwarf, the reason for this was because it was discovered to be white in color. This for astronomers at the time meant that it had to be very small, because for them if somethig is very dim and shines white it can not have a large radius. See the image under title, this is thought to be the radius of most white dwarf stars, around the size of Earth.

After the designation of these dim, white color stars as white dwarfs Astronomers started to calculate the mass of these objects. This was possible for Sirius B and 40 Eridani B because they were part of binary systems and the orbit could be used to calculate the mass. The mass for Sirius B was calculated to be the same as our Sun and 40 Eridani B half the mass of the Sun.

The discovery of these high masses for objects around the size of the Earth presented a rather radical conclusion to astronomers at the time, i quote Arthur Eddington[3] in 1927 he said:

*We learn about the stars by receiving and interpreting the messages which their light brings to us. The message of the Companion of Sirius when it was decoded ran: "I am composed of material 3,000 times denser than anything you have ever come across; a ton of my material would be a little nugget that you could put in a matchbox." What reply can one make to such a message? The reply which most of us made in 1914 was—"**Shut up. Don't talk nonsense.**"*

The high mass was fitted in this very small sized world and theories of super dense matter were born and started to proliferate, standard astronomy never looked back. In this paper i will look back.

In a recent paper i classified all stars and planets within 20 light years[3] and in this volume of space there are 6 white dwarf (WD) stars , i made a table to have a good overview of their characteristics; I also put in our Sun (Sol) for comparison:

WD Stars	ly	Temp (K)	Mass ⊙	Radius ⊙	Luminosity ⊙
Sirius B	8,6	25193	1,018	0,0084	0,0056
Procyon B	11,4	7740	0,602	0,0123	0,00049
van Maanen 2	13,9	6220	0,68	0,011	0,00017
LP 145-141	15,1	8500	0,75	unknown	0,0005
40 Eridani B	16,5	16500	0,573	0,014	0,013
Stein 2051 B	18,1	7050	0,675	0,0111	unknown
//					
Sol	0	5772	1	1	1

The first thing to notice is the temperature; we can see that all the white dwarfs stars are given a higher temperature then Sol. In Stellar Metamorphosis this means these are young very hot objects.

You can also see the masses are between half that of Sol and the same as Sol and the radius is said to be Earth like (Earth is about 0,01 solar radius). Sirius B is given a smaller radius than the Earth but the same mass as Sol; can this be correct?

Looking back i think they used the correct method to determine mass for Sirius B And 40 Eridani B, using the orbit as a guide and known gravity equations, these equations work because they were derived from direct observation of stellar orbits . The calculated masses can thus be said to give us likely accurate information about the amount of matter in these stars. Where the astronomers went wrong is that they determined the radius before they knew the masses, solely based on the dimness and the white light, the small Earth like radius was always an assumption. After the mass was calculated they were astonished; they had to put a large amount of matter in a very small radius. Without going into detail about why such a dense matter state is not probable* i will make a more logical and natural case for this statement:

"White dwarf stars are just as large as other stars and also follow evolutionary paths as per Stellar Metamorphosis"

To make the case i will give exhibits on the next page just as if this is a court case. But first below a picture of the current astronomy viewpoint, the last picture is said to be that of a "nova remnant"; these are found much further away from us, but the centers are said to also be White Dwarf stars! To solve the case i will look at the stellar birthing process as well.

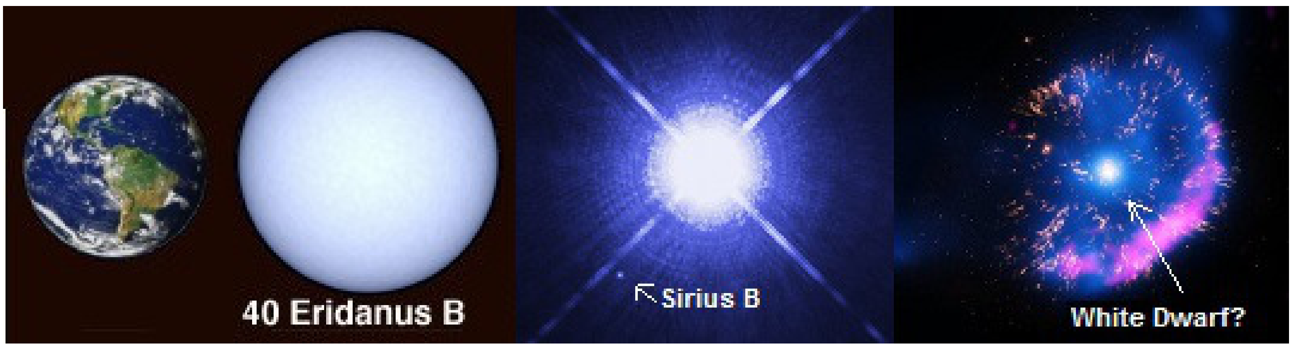
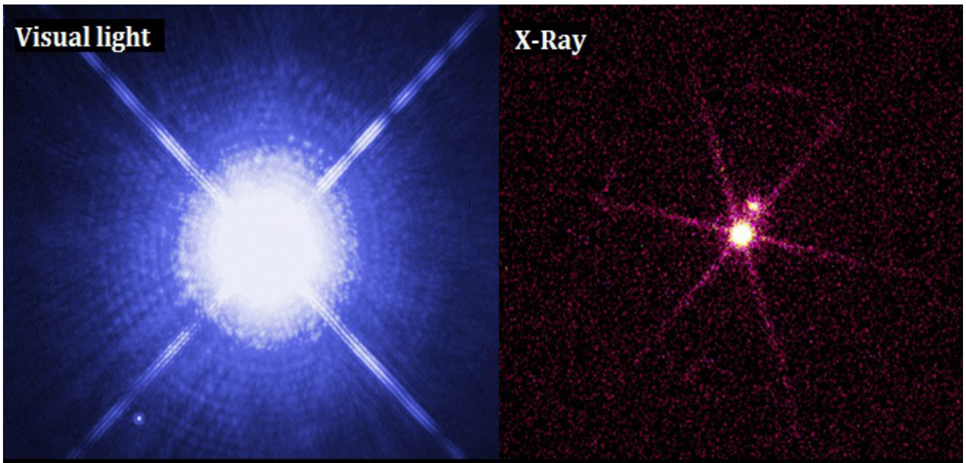


Exhibit A:



Left: Sirius A is a large white star in visual light, Sirius B is small and faintish.

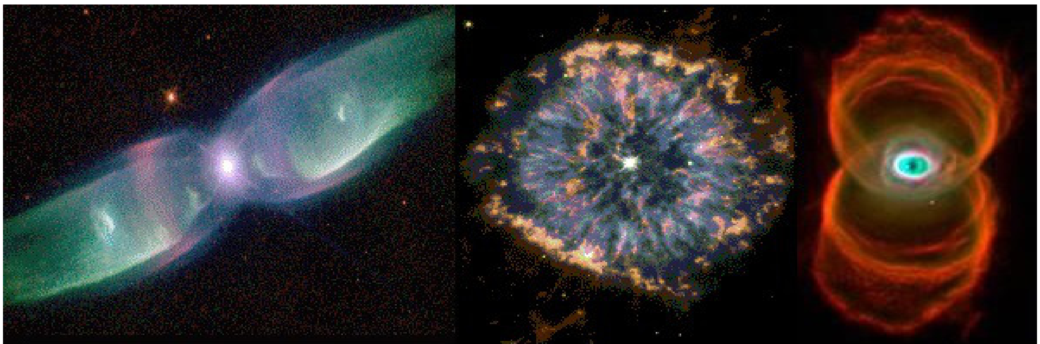
Right: In X-Ray Sirius B is brighter than Sirius A.

Sirius A is said to be 1,7 times larger than our sun and 2 times the mass, and certainly does look like it in the left picture, the lower left little light is Sirius B, it is indeed very tiny in the visible light range, but on the right the larger light source is Sirius B, it no longer looks smaller than Sirius A, this in in X-Ray light; i would say that is very luminous. I had luminosity in the table above but never addressed it because this exhibit proves Sirius B is actually very luminous and it also confirms the temperature reading of 25000 K. This is an electron temperature, this means Sirius B is very electrically active, is a normal sized stars probably as large or a little smaller than our sun, confirming the mass being similar to our Sun.

Exhibit B:
Stars are hot and bright and planets are not, White Dwarfs stars are hot and not always bright in the visible, but still bright and massive enough that they are called stars for a reason, they are not planets and thus not planet sized.

Exhibit C - The birth of stars:
Stars are born in stellar pinches (Bennet-pinch or Birkeland current pinch or z-pinch etc), in astronomy this is not widely known nor accepted, they actually have a menagerie of objects with different names and give to them different ages for the exact same thing; namely stellar birth. These names are planetary nebula, nova remnant, nova explosion, super nova, protostar, protoplanetary nebula, accretion disk,... and probably more.

All these things are the same thing just usually seen from a different angle or a different stage in the birthing process:



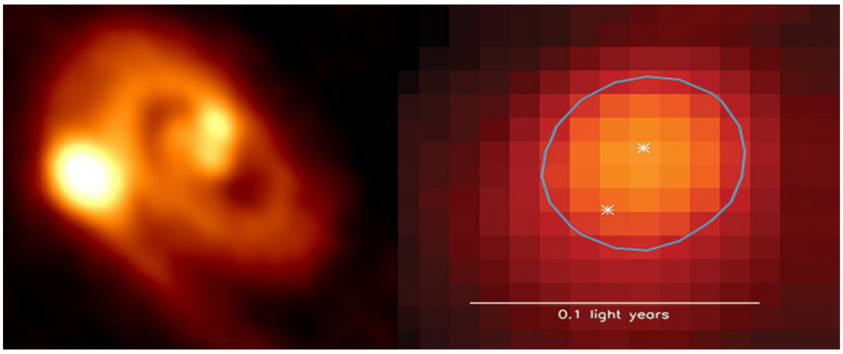
Side view Top Down Skewed (top+side)

Stellar pinches are (when the plasma of the current filament is fully visible) shaped like an hourglass, see the first picture in the above image, the middle is a top down view (down the barrel) and the last picture a skewed perspective.

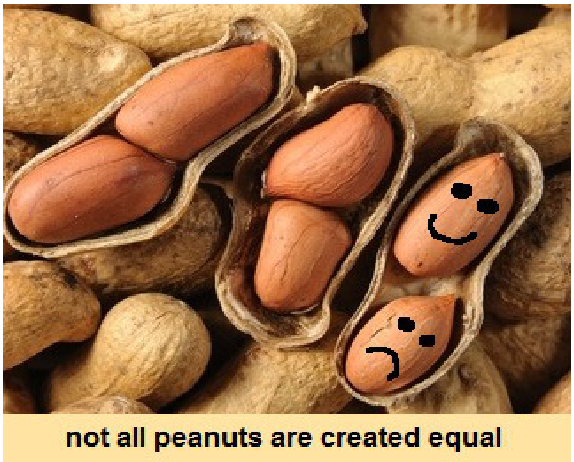
Why is this important for white dwarf stars? Because in standard astronomy the central objects are said to be white dwarf stars, but in standard astronomy these are also nova explsosions and thus deaths of stars; why would there be a white dwarf star left in the center? This is not logical. Such energetic events must be seen as star births, this places white dwarf stars also as young objects in Stellar Metamorphosis, they are the start of an evolutionary path not the end.

Exhibit D – binary and triplet star births.

New findings in the birthing process of stars by ALMA, double and even triple systems[4]:



This new data points to evidence (and there is more data) that stars are often born in pairs, nature is not wasteful. A stellar pinch gathers material (via magnetic constriction) from surrounding space (interstallar dust) and pinches it in the center to form a new young star, at first most matter goes to the main focus of the pinch, if more matter is drawn in then is needed to form one star; a second star is pinched. This creates an inequality between the 2 stars. Why is this import for white dwarf stars? It means that stars can be born with a lower mass than their parent star, they are young and hot but did not get as much matter as their parent, ie they are born less massive. Having less mass means they are on a different evolutionary path. It's peanuts really.

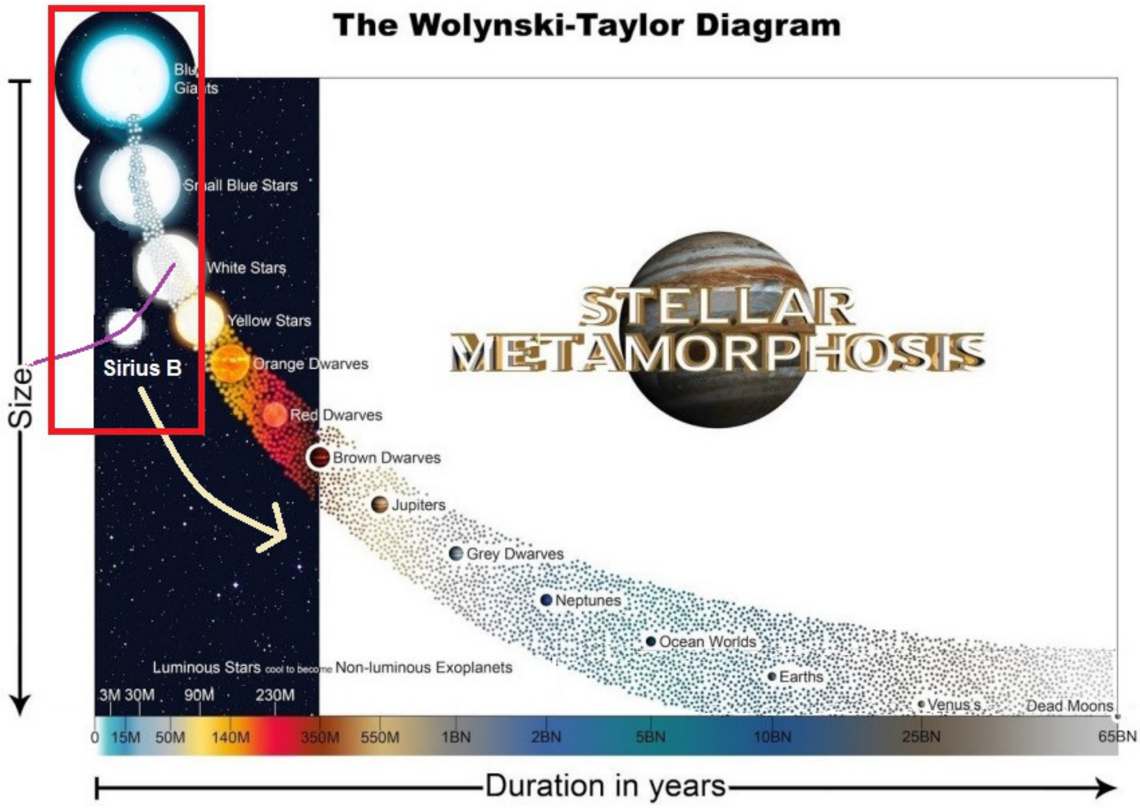


Closing statements and verdict:

This means white dwarf stars can be correctly placed in Stellar Metamorphosis as young stars, after their birth they do not have to increase greatly in size anymore, they might puff up a little bit after the pinch subsides but it is no longer needed. When born less massive they will evolve faster and there is a chance they go below the Taylor threshold[5], never making it to life host stage.

I never discussed blue dwarf stars because they are a prediction of standard astronomy; they have actually never been observed, but there could be very young stars just being born (like wolf-rayet dwarf stars) with a blue spectrum.

In light of the above and to make it all more clear i added this to the Wolynski Taylor diagram; on the next page:



The red square is the star birth size range. All Astrons[6] start out young and hot and then cool and shrink just like any other new born star. White Dwarf stars like Sirius B start out a little smaller than white stars (i drew it maybe too small, it should be about the size of our Sun, a yellow star) and follow the pale yellow line in their evolution. I also drew in a phase curve[7] to show the white dwarf star is in the white star phase of its evolution.

I hope these ideas are clear and as a final conclusion i want to make no conclusion, there could still be more things to discover about these objects, but i do hope it is enough to dispense with the idea that White Dwarf stars are around the size of the Earth and composed of super dense (very exotic) matter; something that always bugged me.

sidera nostra invenimus in veris

*if the case is made white dwarf stars are normal sized stars we can dispense with notions of super dense matter, also the paper would get too long if it would go into detail about plasma physics.

References:

1 J. Wolynski, An Alternative for the Star Sciences: http://vixra.org/pdf/1205.0107v9.pdf

2 Eddington, A. S. (1927), *Stars and Atoms*

3 D. Archer, (2019), Classification of Astrons Within 20 Light Years: http://vixra.org/abs/1902.0049

4 Sarah I. Sadavoy and Steven W. Stahler (2017), Embedded Binaries and Their Dense Cores: arXiv:1705.00049 [astro-ph.SR]

5 J. Wolynski, The Taylor Threshold: http://vixra.org/pdf/1708.0014v1.pdf

6 M. Zajaczkowski, Star and Planet: Stages of Astron Evolution: http://vixra.org/pdf/1510.0381v1.pdf

7 J. Wolynski, 2018, Phase Curves in Stellar Metamorphosis: http://vixra.org/pdf/1808.0568v1.pdf