Stellar Metamorphosis: The Location of Subdwarf B and O Stars on the Wolynski-Taylor Diagram

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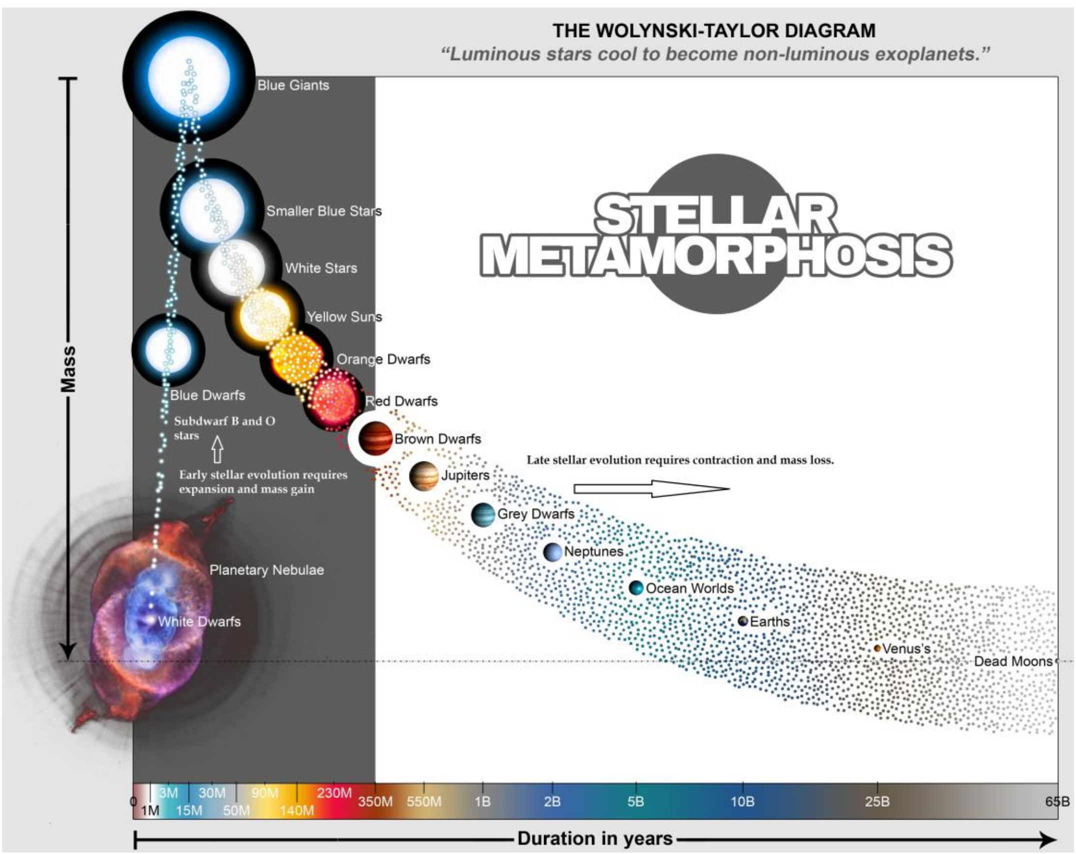
Abstract: Subdwarf B and O stars are placed on the Wolynski-Taylor Diagram. They are intermediate white dwarfs which are expanding/contracting at regular rates giving the impression that they are pulsing, all the way until they fully expand into O star stages. From then, they will begin cooling and contracting slowly, losing mass and energy becoming the much more highly evolved brown dwarfs, and then to the objects called "planet".



Looking at the graph we can see that stars start off really small, hot and violent. They then expand greatly and shine with huge luminosities and have enormous masses. They do not remain in their really large, hot stages at the top. They cool and shrink, dimming and losing mass as they evolve. As well, the more advanced stages will more than likely last longer than previous stages, so this means Subdwarf B and O type stars are very short lived as opposed to blue giants, which are themselves very short lived as opposed to their much more highly evolved red dwarf counterparts. Red dwarfs themselves are much shorter lived than brown dwarfs and so on and so forth. It is important to note that the more evolved a star becomes, the longer its stage of evolution is, and the most stable stars are the ones that can host life for billions of years. Young stars cannot do that, as their atmospheres are too energetic, and they have no solid surfaces, as well have various pressures internally that would prevent the formation of the dissipative structures we see as life itself.

The purposes of this paper are to let people know that any star can be placed on this diagram. If it cannot be placed on this diagram, then it probably is not a star, or it does not exist, such as black holes and the like. It is suggested to ignore the interpretations of mainstream concerning subdwarf B and O stars being billions of years old. As a good rule of thumb, extremely energetic objects in nature do not last for billions of years. Only objects that are stable such as rocks, minerals and iron/nickel alloy for example can last for billions of years. Objects that are between 20,000-100,000 Kelvin inside of a ~3 Kelvin heat bath (outer space) are not going to remain that temperature for billions of years. There is too much motion for the star to remain stable, and that is what temperature stands for, the movement of matter. Having vastly lower enthalpies increases the stars stability. Stars with extremely high enthalpies are young. This being said, since extremely energetic stars do not last that long, as opposed to their ancient counterparts that are composed of rocks and minerals, then chances are they are very young. This means white dwarfs, subdwarf B and O stars, and basically all stars with strong visible spectrums are very young. They belong at the very front of this graph, among all the other youthful stars.

Mass	$0.5 \pm 0.05\ M_{\odot}$
Radius	$0.23 \pm 0.03\ R_{\odot}$
Luminosity	$15.4\ L_{\odot}$
Surface gravity (log g)	5.15 cgs
Temperature	29300 ± 500 K
Age	$>10 \times 10^{9}$ years

As the reader can see above, the data for V391 Pegasi a Subdwarf B star, has it greater than 10 billion years old. They have it older than the Earth, and the Earth is composed of extremely stable rocks and minerals and has a many billion cubic kilometer iron/nickel alloy core. Not only that, but it has life! Life is hosted by old stars, and old stars don't shine (relatively speaking). V391 Pegasi hasn't even taken its diapers off yet! It hasn't had enough time to do anything but shine! That thing is younger and more energetic than the Sun! It is probably a maximum 15 million years old at the most. Not 10,000 million years plus!