Stellar Metamorphosis: Maximum Mass of a Dead Star

Jeffrey J. Wolynski
Jeffrey.wolynski@yahoo.com
June 30, 2019
Rockledge, FL 32955

Abstract: The purpose of this paper is to re-interpret stellar evolution from physical observations in accordance with the General Theory. The most massive dead star that has been observed to date is Venus, therefore, Venus's mass is currently the maximum mass for any observable, and confirmed dead star. Explanation is provided.

According to the dogma, white dwarfs are dead stars. This is false. A white dwarf has a mass comparable to the Sun, is tens of thousands of degrees Kelvin, is extremely dense, rotates rapidly, and has a strong global magnetic field. Dead stars do not have those characteristics. Dead stars lack strong global magnetic fields, are much less dense and massive, are composed of the lowest enthalpies of matter, rotate extremely slowly, and are not extremely hot. Dead stars as well do not shine as do white dwarfs, they can only reflect large amounts of light, as does Venus. The only way dead stars can been seen is if they have a high enough albedo, they are large enough and they are close by astronomical standards. Dead stars cannot strongly be emissive, they can only reflect strongly.

This being said, the maximum measured mass of a dead star is $4.8675 * 10^{24}$ Kg. This of course can change in the future, but it will only change with more mass added. When the Earth completely solidifies, losing its strong magnetic field, and its rotational momentum diminishes, it will be about the same mass it is now. This means it will have a maximum mass of $5.97237 * 10^{24}$ Kg, possibly supplanting Venus's mass, but it hasn't happened yet. Earth still has a strong global magnetic field, is still spinning once every 24 hours, as well has life on it. Earth is not dead yet, so it cannot be labeled as a dead star with the maximum mass.

Looking at the actual observationally confirmed dead star, Venus, and the very old, post total-ocean world stage Earth, we can easily conclude on circumstantial evidence that the possible maximum mass of a dead star is $\sim 6 * 10^{24}$ Kg. In the future when stars are found that are lacking strong magnetic fields as does Venus, but are solid material and heavier, then we can adjust these findings. Until then, we can take the circumstantial evidence and draw up an interesting conclusion. All "exoplanets" (evolved/evolving possibly dead stars), that are more massive than $6 * 10^{24}$ Kg, are not dead, but active, and have features possessed by the Earth. This is due to the mass loss principle. The star only loses mass after blue giant stages, therefore a dead star cannot be more massive than its own dead "limit". As well, this does not apply in the reverse though.

A star can be lower in mass than $6 * 10^{24}$ Kg, but that does not signal that it is "dead". It is only stars that are more massive than

the limit cannot be dead, in this case Mars is a good example. It was less massive than Venus when it was hosting life, and was more active. The dead star mass limit is more of a rule of thumb at the moment, but is important to determine the qualities of evolving stars at a distance, with just "1" variable, its mass. So in terms of Jupiter mass, we can use this idea to determine what the qualities of exoplanets (evolved stars) are.

YZ Ceti d, .00359 Jupiter Masses,
Gliese 273 c, .00371 Jupiter masses,
GJ 725 B b, .0038 Jupiter Masses
Proxima Centauri b, .004 Jupiter Masses,
Trappist-1g at .00422 Jupiter Masses
Trappist-1c at .00434 Jupiter Masses

…are all probably active using this rule of thumb, they could be very old stars probably similar to Earth, and have strong global magnetic fields. If you notice only 2 Trappist stars qualify under the "alive" moniker of this maximum mass limit. The other's? Not so much.

This is again, wonderful news, that we have a theory that can use very little information to determine what's going on.

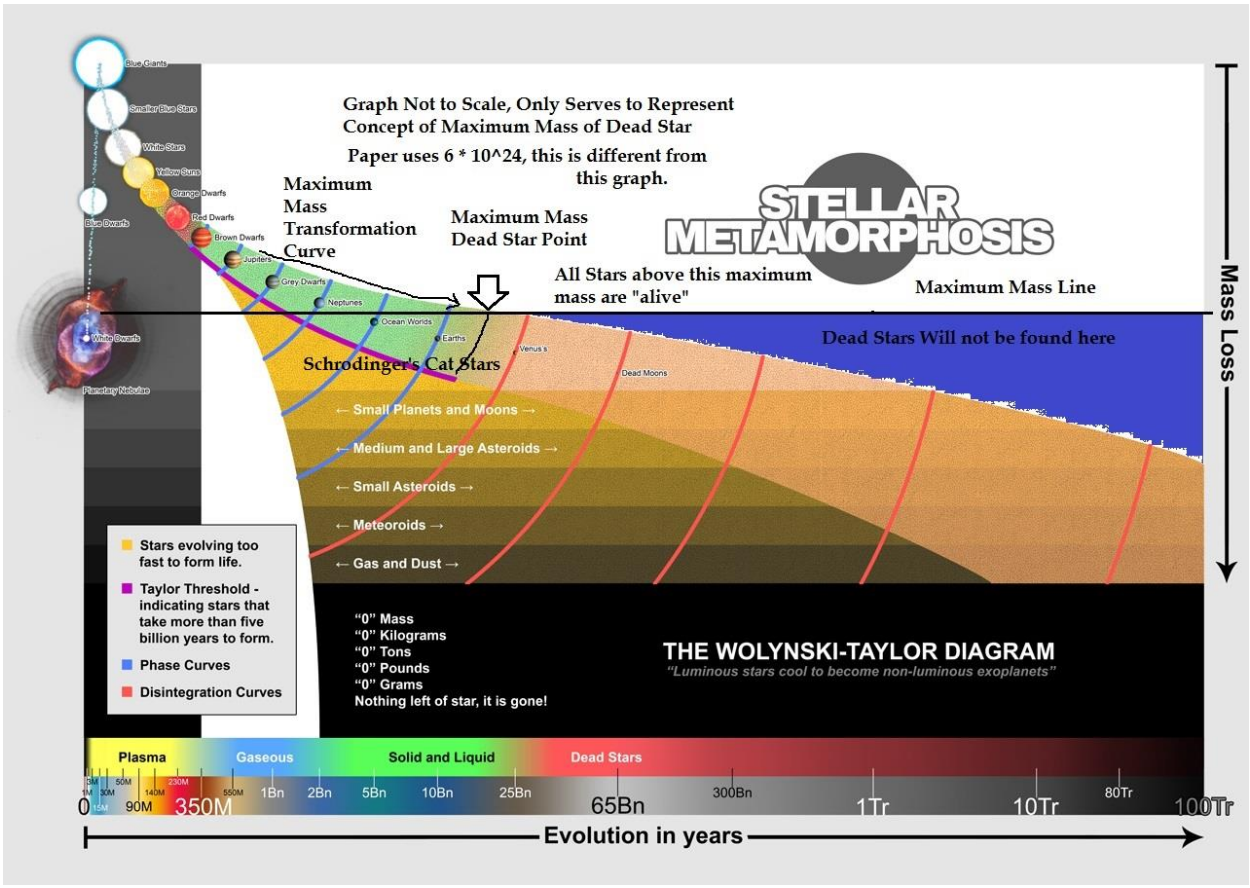
The maximum mass line does not work though with objects below the $6 * 10^{24}$ mass limit. Objects that are below that we need more information. They could sit literally anywhere below the line, and be dead or alive. Schrodinger's Cat Stars.

A Schrodinger Cat Star would be

Trappist-1b, at .00267 Jupiter Masses
Trappist-1f, at .00214 Jupiter Masses
Kepler 70c at .0021 Jupiter Masses
Kepler 138d at .00201 Jupiter Masses
Trappist-1e, at .00195 Jupiter Masses
HD 10180 j, at .0016 Jupiter Masses
Kepler-70b at .0014 Jupiter Masses
Trappist-1d at .00129 Jupiter Masses

I am not saying these top stars are "dead", I am saying that are possibly dead or alive. They are too small to tell. They could be small sterile ocean worlds for all I know, but for sure, they don't have the positive, totally "alive" mass required. They are not sure things. The more massive ones that are above the maximum mass threshold are.

Below is a MS Paint of the WT Diagram outlining the zones. More work will be done to elaborate this idea in depth.


Graph Not to Scale, Only Serves to Represent Concept of Maximum Mass of Dead Star
Paper uses 6 * 10^24, this is different from this graph.
STELLAR METAMORPHOSIS
Maximum Mass Transformation Curve
Maximum Mass Dead Star Point
All Stars above this maximum mass are "alive"
Maximum Mass Line
Mass Loss
Dead Stars Will not be found here
Schrodinger's Cat Stars
Blue Giants
Smaller Blue Stars
White Stars
Yellow Suns
Orange Dwarfs
Red Dwarfs
Blue Dwarfs
Brown Dwarfs
Jupiters
Grey Dwarfs
Neptunes
Ocean Worlds
Earths
Venus's
Dead Moons
White Dwarfs
Planetary Nebulae
← Small Planets and Moons →
← Medium and Large Asteroids →
← Small Asteroids →
← Meteoroids →
← Gas and Dust →
Stars evolving too fast to form life.
Taylor Threshold - indicating stars that take more than five billion years to form.
Phase Curves
Disintegration Curves
"0" Mass
"0" Kilograms
"0" Tons
"0" Pounds
"0" Grams
Nothing left of star, it is gone!
THE WOLYNSKI-TAYLOR DIAGRAM
"Luminous stars cool to become non-luminous exoplanets"
Plasma
Gaseous
Solid and Liquid
Dead Stars
0
90M
350M
1Bn
2Bn
5Bn
10Bn
25Bn
65Bn
300Bn
1Tr
10Tr
80Tr
100Tr
Evolution in years