Lithium Abundance to Determine Future Size of Star

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Abstract: A new idea is presented to try and predict the future size of stars as they cool and solidify into solid worlds many billions of years into their metamorphosis, by utilizing the abundances of lithium.

To keep consistency with stellar metamorphosis, it is known that stars are not the location for any type of large scale fusion reactions. Large scale fusion processes belong to the objects known as pulsars, quasars and Active Galactic Nuclei. Therefore the lithium test to distinguish a brown dwarf from a star is moot. The test goes as follows, if the star has little to no lithium in its spectrum then it means it used it up for fusion processes. So if there is an object that has more lithium than expected then it can be classified as a brown dwarf, as the brown dwarf could have not had the mass to fuse matter in its central regions. This is not in congruence with stellar metamorphosis, as ancient stars such as Earth and brown dwarfs have lithium, so there is no possible way they could have been fusion powered when they were like the Sun. As well they are much older than stars that have strong visible spectrums with very little lithium. Which leads the author to the hypothesis of being able to determine how large a star will become (given the extent of its crust/rocky surface), by determining the amount of lithium in early stellar evolution. For instance, if a star such as the Sun has a measured 6 billionths of a percent lithium, and we can assume that very little lithium is lost as it cools and transitions to red dwarf, then brown dwarf stages of evolution (because the lithium becomes more abundant to our measuring the spectroscopy of the star), and the lithium is mostly kept. Of course there will be some loss due to photoevaporation/disintegration to hotter hosts as shown by the existence of Hot Jupiters, but for the most part during those early transitions the lithium remains, due to some specific property, as well as boron and beryllium, while it is in its ionized state.

With the lithium kept in about the same amount as when it was measured in the younger hotter star, that 6 billionths of a percent would translate to how ever much mass the star started out as. For instance, if the Sun is 330,000 times the mass of the Earth, then the total mass of lithium that will be found in the Sun when it becomes Earth-like will be .002 of a percent of the mass of the new object. That would be .00002 % of lithium comprising the crust of the Earth, making the Sun as an Earth-like object as 100 times more massive than the Earth. This is assuming two things though which there is little information on, how much lithium would be lost during stellar evolution, and how much lithium the Earth possesses lower than the measurements than the crust can show. If the crust has only 1/50 of the presumed lithium available on the Earth, then it means the Sun will become about twice the mass of the Earth, and given some lithium is lost to photoevaporation/disintegration to hotter hosts, it will become the mass of Earth. Of course this is all hypothetical, but it can be based on measurements, and a reverse engineering of the Earth itself, using the abundances of an element that persists throughout a star's evolution, lithium.