

# Re: Sun, stars, binary systems

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- *From:* Craig Markwardt <[craigmnet@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:craigmnet@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* 26 Aug 2007 22:15:34 -0400
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pstanley55@xxxxxxxxxxx writes:

On 26 Aug 2007 03:37:29 -0400, Craig Markwardt  
<[craigmnet@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:craigmnet@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)> wrote:

For a body to be a "star" — that is, to be powered by fusion — it must have a certain minimum mass, probably about 10% of the mass of the sun. There is no way such a star's gravitational pull would be missed, since it would affect the orbits of the other planets. For comparison, Jupiter has only 0.7% of the mass of the sun.

Thanks for the responses Craig. Any estimates on the minimum distance 2 stars in a binary system can realistically be expected to come? Are we talking the orbital radius of Neptune or less or more?

Do you mean any possible two stars anywhere in the galaxy? Or your hypothetical "star" in our solar system?

If a companion star were orbiting near Neptune, what do you think that would do to the orbit of Neptune? or Uranus? Or the Kuiper Belt? Or the Oort Cloud?

>Low mass stars have lifetimes in the billions of years. Their

end-states are white dwarfs, which are themselves luminous, and cool for billions of years. So it's totally implausible that such a star existed.

It was also suggested to me that one of our planets could have been this other star. Can that make any sense at all?

Re: Sun, stars, binary systems

Not really. None of the planets has remotely enough mass to start fusion, nor is any of the planets a white dwarf.

I'm presuming a white dwarf then retains an order of magnitude the same mass as before it dies. Hence an extremely dense body in comparison to planets, and hence pretty well impossible to be in "orbit" around a sun. Would this be correct?

Not really, but then again I never claimed it would be impossible for a white dwarf to orbit another star.

What I did say was that none of the planets \*is\* a white dwarf. That's just an observational fact. The point being, none of the planets is, was, or will be a star.

CM

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