

Passage 5 - Conflicting viewpoints on the evolution of the Algol system (physics/ earth science)

Introduction:

- three stages of star evolution: pre-MS, MS, and post-MS
- formation of pre-MS star: cloud of dust and gas collapse and heat up due to gravity
- pre-MS star's energy is from emission of hot dust and gas
- formation of MS star from pre-MS star: when most of the pre-MS's energy is made from fusion in the center (hydrogen nuclei/protons combine into helium nuclei)
- formation of post-MS star from MS star: star expands in volume. Now, most of the fusion is in the shell around the center

-if a star is larger, it evolves faster from pre-MS to MS to post-MS

-One solar mass = our Sun's mass

Algol A - 3.6 solar-mass, MS (a lot more massive than the Sun)

Algol B - 0.8 solar-mass, post-MS (less massive than the Sun)

Algol C - 1.7 solar-mass, MS (almost twice as massive as the Sun, and half as massive as Algol A)

-Algol A, B, and C orbit a mutual center of mass.

-Algol A and B are closer to the center, and closer to each other, than is C

Student 1:

-Algol A, B, C all formed at the same time, from same dust cloud.

-Algol B (now the least massive) was originally the most massive

-Algol B expanded in volume and is post-MS

-Algol A is MS

-Algol A gained matter (dust and other substances) from Algol B, so over time A became larger than Algol B

Student 2:

-Algol A, C formed at the same time and from the same dust cloud.

-Algol B formed at different time from different cloud and in different (but intersecting) orbit

-at a certain point, B joined the orbit of A and C

-Algol B is post-MS

-Algol A, C are MS

-Algol A never gained matter from Algol B

Conclusions:

- Students 1 and 2 agree on the current size and type of star Algol A, B, and C are
- Students 1 and 2 disagree on how the Algol system of A, B, and C formed.
- Students 1 and 2 disagree on whether matter was ever transferred from B to A.

Notes:

-While straightforward, there are a lot of names and events to track. In some Conflicting Viewpoint passages, it may be helpful to organize the info on the page you have.

-As always, the introductory info is very important. Take the time to write on your page the numerical info in the introduction in a way that is easier to understand, like

Algol A - 3.6 solar-mass, MS

Algol B - 0.8 solar-mass, post-MS

Algol C - 1.7 solar-mass, MS