

Introduction to Astronomy

HW081224

due in one week

1. Suppose the Moon were removed and replaced in its orbit by Titan. What changes would you expect to occur in Titan's atmosphere? Would solar eclipse be more or less frequent as seen from Earth? Explain your reasoning.
2. A positron has the same mass as an electron. Calculate the amount of energy released by the annihilation of an electron and positron. The productions of this annihilation are two photons, each of equal energy. Calculate the wavelength of each photon. Which wavelength regime does this wavelength belong to?
3. Assuming that the current rate of hydrogen fusion in the Sun remains constant, what fraction of the Sun's mass will be converted into helium over the next 5 billion years? How will this affect the overall chemical composition of the Sun?