The Planetary-Stellar Mass-Luminosity Relation: Possible Evidence of Energy Nonconservation?

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Abstract

The mass-luminosity coordinates for the Jovian planets are found to lie along the lower main sequence stellar mass-luminosity relation, suggesting that both planets and red dwarf stars are powered by a similar non-nuclear source of energy. These findings support a prediction of subquantum kinetics that celestial bodies produce "genic" energy due to non-Doppler blueshifting of their photons at a rate that depends on the value of their ambient gravity potential. Genic energy also accounts for 40% of the Moon's thermal flux, all the Earth's core heat flux, and over half of the Sun's luminosity, thereby resolving the mystery of the Sun's low neutrino flux. The upward bend in the mass-luminosity relation and inflection in the luminosity function at 0.45 $M_\odot$ are attributed to the onset of nuclear burning, fusion reactions igniting at a greater stellar mass than had been previously supposed.

Key words: energy conservation violations, planets, stars, white dwarfs, mass-luminosity relation, luminosity function, genic energy, fusion energy, solar neutrino problem, supernovas, galactic core explosions, cosmological redshift, subquantum kinetics

1. INTRODUCTION

The notion that energy is strictly conserved is a universally accepted hypothesis, but nevertheless, only a hypothesis. From an observational point of view, one can reasonably claim only that a photon's energy is conserved *to within experimentally verifiable limits*. Laser interferometery provides one of the best ways of determining the energy constancy of a photon beam in the laboratory. The frequency of the iodine-stabilized He–Ne laser can be shown to be stable to about one part in 3×10^{13} over a 10^5-s sample integration time. A null result from interferometric measurements made on a 100-m beam from such a laser would establish only that the rate of energy change in the beam's photons was less than $10^{-7}\ \mathrm{s}^{-1}$.

Such an assurance level, while sufficient for adhering to the energy conservation assumption when considering physical phenomena observed in a laboratory, is insufficient where astronomical phenomena are concerned. Nonconservative energy change rates far smaller than this can be tremendously important in the astrophysical arena, particularly in considering the rate of energy generation in stars. Consider the Sun, for example. The Sun's total thermal energy content may be roughly estimated as $H_\odot = \bar{C}M\bar{T} = 4.5 \times 10^{48}$ erg, where $\bar{C}$, M, and $\bar{T}$ are the Sun's average specific heat, mass, and average internal temperature. Consequently, the Sun's luminosity of $3.9 \times 10^{33}\ \mathrm{erg \cdot s^{-1}}$ could be entirely explained if its energy quanta were to increase their energies at a rate of just $10^{-15}\ \mathrm{s}^{-1}$. This photon blueshifting rate is eight orders of magnitude smaller than the smallest energy change detectable with laboratory instrumentation. Therefore, we may be justified in attributing a substantial portion of the Sun's luminosity to such a non-nuclear mechanism. This may not be totally unreasonable, since fusion models are unable to adequately account for the low solar neutrino flux, which averages about 25% ± 12% of the expected amount in ^{37}Cl detectors and 46% ± 13% in the Kamiokande-II neutrino detector.(1) This discrepancy could be resolved if fusion supplied about one-third of the Sun's energy, with the remaining two-thirds coming from photon energy amplification (non-Doppler blueshifting).

Conservation law violations of comparable magnitude would also have important consequences for cosmological theory. For example, a photon energy loss rate of only $d/dt(dE/E) = -H_0 = -3.1 \times 10^{-18}\ \mathrm{s}^{-1}$ (or a 9.7% change for every billion light-years traveled) is able to entirely account for the cosmological redshift effect.(2) This energy loss rate is about ten orders of magnitude smaller than the laboratory observation limit. The existence of such a "tired-light" redshifting phenomenon would obviate the need for an expanding universe and weigh against a big bang origin. In fact, several studies demonstrate that cosmological test data as well as simple logic favor a stationary universe tired-light cosmology over an expanding-universe