

Abstract Submitted
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Thermalization Tendency of ElectroMagnetic Radiation in Transit Through AstroPhysical Mediums C.F. GALLO, Superconix — As ElectroMagnetic Radiation from a hot source transits through a cooler interacting medium, the following are demonstrated from thermodynamic arguments. (1) The “hot” radiation always loses some energy to the cooler interacting medium. (2) Detailed behavior depends upon the microscopic nature of the interacting medium. (3) A Redshift will occur, but not necessarily imitate the wavelength dependence of the Doppler Redshift. (4) A Doppler-type redshift will occur only if the interaction cross-section is directly proportional to the photon energy. (5) The loss of radiative energy to the intergalactic medium will contribute to the Cosmic Microwave Background Radiation. The following characteristics depend upon the detailed nature of the interacting medium. (1) The photon energy loss per collision. (2) The magnitude (cross-sections) of the thermalization process. (3) The energy dependence of the cross-section for various mediums. (4) Forward propagation characteristics of the Redshifted EM radiation. Although the effects are small, the cumulative redshift in astrophysical situations can be significant. Earthly experiments are planned.

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