Cosmic Dust and Dark Energy

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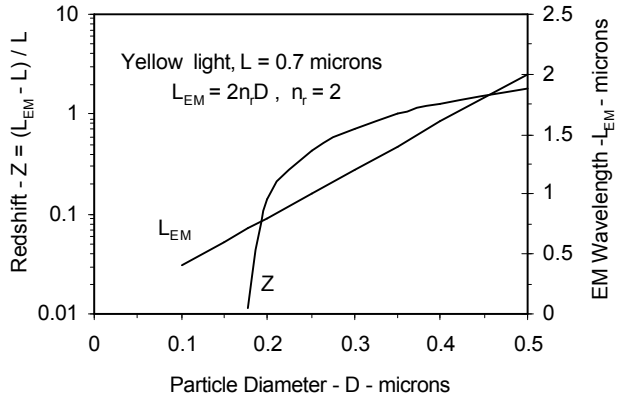
Cosmic dust particles (DPs) are shown [1] to produce redshift of supernova light without the Universe expanding following the Big Bang (BB). Redshift occurs by QED induced frequency down-conversion of EM radiation upon the absorption of supernova light in DPs. Here QED stands for quantum electrodynamics and EM for electromagnetic. QED constrains the EM emission of the absorbed supernova light to the EM confinement wavelength L_{EM} of the DPs,

$$L_{EM} = 2Dn_r$$

where, D and n_r are the diameter and refractive index of the DPs. For supernova light at wavelength L absorbed in the DPs, the redshift Z is,

$$Z = \frac{L_{EM} - L}{L}$$

In the Intergalactic Medium (IGM), the range of DP diameters D is from 0.1 to 0.4 micron [2]. For yellow supernova light L = 0.7 microns and DP refractive index $n_r < 2$, the redshift Z is shown below.



In the IGM, the first absorption of supernova light by a DP produces redshift Z < 0.1 at D < 0.2 microns, although Z<1 for D < 0.4 microns. Provided DPs > 0.4 microns are not subsequently encountered along the path to the Earth, the supernova light is not further redshift. Regardless, the redshift is caused solely by the QED effect in DPs and has nothing to do with the deceleration or acceleration of an expanding Universe. Given the Hubble redshift Z is related to an expanding universe, it therefore follows that any implied relation [3} of dark energy to an expanding Universe may not be valid. Dark energy may still exist, but cannot be proven from redshift measurements of supernova light. Alternatively, it may be said DPs hold in question the Hubble redshift as proof the BB.

References

[1] Prevenslik, T.V., "Einstein's Universe and Cosmic Dust," at www.nanoqed.net
[2] Corasaniti, P.S., "The Impact of Cosmic Dust on Supernova Cosmology," MNRS, February 2008.
[3] Riess, A.G., et al., "Type Ia Supernova Discoveries at Z >1 from the Hubble Space Telescope Evidence for Past Deceleration and constraints on Dark Energy Evolution," ApJ, 607, 665, 2004.