QED Redshift in Cosmic Dust

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Abstract QED redshift in cosmic dust NPs above that given by Hubble redshift is shown to overstate galaxy velocities giving the impression dark matter is necessary to hold the galaxies together. QED stands for a simplified form of light-matter interaction proposed by Feynman and others and NPs for nanoparticles. But if Hubble redshift is corrected for QED redshift, there is no need for dark matter as the galaxies would be held together by Newtonian mechanics.

Simple QED is a consequence of QM that requires [1] the heat capacity of atoms in NPs to vanish. QM stands for quantum mechanics. Classically, NP atoms have the heat capacity to conserve heat by increasing in temperature. But QM governs the nanoscale, and therefore a galaxy photon travelling to Earth upon being absorbed in a NP cannot increase in temperature. Conservation proceeds as the high surface-to-volume ratio of NPs confines the energy of the absorbed galaxy photon to the NP surface, thereby providing the EM confinement to create standing QED photons across the NP diameter. Since only single galaxy photon can be absorbed in a NP, blueshift is a violation of energy conservation and only QED redshift depending on the size and refractive index of the NP may occur. Once the galaxy light absorbed in the NP surface is depleted in creating the standing QED photon, the confinement vanishes and the QED photon having an increased wavelength is free to travel to Earth as redshifted galaxy light.

Because of the ubiquity of cosmic dust, all astronomical velocities based on Hubble redshift measurements are likely overstated, e.g., the long-standing galaxy rotation problem may be resolved without the need for dark matter if the redshift measurements giving the higher than expected galaxy velocities are corrected for the QED redshift in cosmic dust. Indeed, the spiral galaxy M31 having a flat velocity profile [2] in an edge-on view from the bulge to the edge is caused by the QED redshift from dust NPs in the line-of-sight to the Earth. Hence, the Doppler effect gives the observed flat velocity profile suggesting dark matter exists, but Newton's equations are valid if corrections for QED redshift are made.

Similarly, an accelerating Universe expansion [3] need not occur if data showing supernovae brighter than expected based on the redshift/distance relation are corrected for QED redshift in dust. Extensions of QED redshift as an alternative to dark matter are briefly discussed for other historical astronomical observations.

References

[1] T. Prevenslik, Diverse QED Applications at http://www.nanoqed.org , 2010-2017

[2] V. C. Rubin, W.K. Ford, "Radial Velocities and Line Strengths of Emissions Lines Across the Nuclear Disk of M31," Astrophys. J., vol. 170, pp 25, 1971.

[3] A. G. Riess et al., "The Farthest Known Supernova: Support for an Accelerating Universe and a Glimpse of the Epoch of Deceleration," Astrophys. J., vol. 560, pp.49-71, 2001.