Cosmological Expansion and Its Effect on Small Systems

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(Received: 2006-1-23; Revised: 2006-4-3)

Abstract: In order to study the effect of large scale cosmological expansion on small systems, we assume a Friedmann-Robertson-Walker type coordinate system in presence of a nonzero cosmological constant and derive a non-static Reissner-Nrdström metric. It is an analytic function of r for all values except at r=0, which is singular. By determining the equation of motion in this metric we can estimate how expansion of the universe may affect Pioneer's motion. Because the metric does not have any event horizon and so high potential regions are accessible, this may help us in better understanding AGN phenomenon.

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