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A description of the Cosinusoidal Potential and Cosmology JOHN CUMALAT, DAVID BARTLETT, Univ of Colorado - Boulder — A replacement for Newtonian gravity will be discussed, namely : m ϕ(r) = (GmM/r) cos[2πr/λ_o]. (This replacement is motivated by a paper which shows that only very few central point potentials have an associated uniqueness theorem.) The value of λ_o is selected to be 400 pc. With this constant, the Newtonian gravitation potential differs from the Cosinusoidal potential by 1 part in 10^{14} within our solar system - essentially indistinguishable. The cosinusoidal potential is consistent with the flat rotation curves and the Tully-Fisher law for disk galaxies. It also explains other features of our Galaxy in the halo. Another consequence of this potential is that the bending of light by gravitational lenses can probably be explained without dark matter.

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