



COSMIC EXPANSION OF A CLOUD OF SPHERICALLY SYMMETRIC PERFECT FLUID TO ULTIMATE REST AT TIME INFINITY

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Abstract

A spherically symmetric solution of Einstein's equations is generated which describes expansion of a cloud of perfect fluid to ultimate rest. The fluid has equation of state $p = \rho$ representing a stiff fluid. For the time range $0 \leq t < \infty$ these physical quantities are everywhere finite, although in the solution there is no imposed upper limit on the density at the centre of symmetry, $r = 0$. Density and pressure tend monotonically to zero as the radial coordinate $r \rightarrow \infty$. The fluid comes to rest as $t \rightarrow \infty$. The physical, kinematic and geometrical properties of the metric are calculated. The solution is a potential source of gravitational waves and also adds credence to the notion of a multiverse world.

Keywords and phrases: general relativity, perfect fluid, spherically symmetric, multiverse world, gravitational waves.

