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Nonsingular Chaplygin gas cosmologies in universes connected by a wormhole

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Abstract

We present some exact solutions of the Einstein equations with an anisotropic fluid exploiting the Chaplygin equation of state. The solutions describe space-times with two identical T-regions and an intermediate static spherically symmetric R-region containing a wormhole. The metric in the T-region represents an anisotropic Kantowski-Sachs cosmological model. Its evolution starts from a horizon and develops according to different scenarios including eternal expansion, contraction and also a finite lifetime. © 2013 Pleiades Publishing, Ltd.

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