

## Abstract

We present a FriedmannRobertsonWalker quantum cosmological model in the presence of Chaplygin gas and perfect fluid for early and late time epochs. In this work, we consider perfect fluid as an effective potential and apply Schutz's variational formalism to the Chaplygin gas which recovers the notion of time. These give rise to SchrödingerWheelerDeWitt equation for the scale factor. We use the eigenfunctions in order to construct wave packets and study the time dependent behavior of the expectation value of the scale factor using the many-worlds interpretation of quantum mechanics. We show that contrary to the classical case, the expectation value of the scale factor avoids singularity at quantum level. Moreover, this model predicts that the expansion of Universe is accelerating for the late times.