

Abstract

Some theories suggest that gravitational waves created in the early universe may be observable with future gravitational wave interferometers. As a result, identifying the characteristics of these gravitational waves and their corresponding power spectrums at different epochs has become an important area of study. The general solutions to these equations can become quite complex, making the task of obtaining analytical results a difficult one without simplifying assumptions. Using numerical techniques, a general solution to the birefringent gravitational wave equation is explored. This form of the gravitational wave equation is partly composed of a mode function that resembles the Coulomb wave equation from quantum mechanics, which has been explored computationally in the past. An attempt is then made to numerically solve these equations and the corresponding power spectrum for the present universe. Current/planned observatories such as LISA and Advanced LIGO can test these results.