# Modeling Gravitational Waves through Time

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**Abstract**

In this paper a metric is postulated using the fully nonlinear Einstein equations that admit solutions which can be interpreted as gravitational waves with a solution to describe a cosmos whose early phase is a big bang. These gravitational waves were generated during the inflation period of the universe ($10^{-35}$ s), going through a billionth of a second, last scattering of the cosmic microwave background, CMB, until 13.82 billions of years (today). Logarithmic graphs obtained can be interpreted as gravitational waves that distort the space-time, inducing potential changes in the polarization of the light. This light was released 380,000 years later in what today is seen as CMB. We model the gravitational waves describing them by flat space times, taking into account that a plane waves exist as a class of solutions of the Einstein field equations (Ricci tensor, Rμν, equal to zero) that at infinity tend to the Minkowski space.

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