

# **Gravitational Signature of Matter-Antimatter Interaction**

## **Abstract**

The gravitational signature of antimatter has received growing interest during the past few decades. Much of the theoretical work in ordinary tensor gravity rules out any difference in the gravitational interaction of matter and antimatter. Fundamental principles and theoretical models describing the nature of matter and antimatter are reviewed. The implication of a probable repulsive field between matter and antimatter and its far reaching consequences on certain cosmic issues, such as the early phase of the Big Bang, the Hawking radiation, virtual particle production and annihilations, are discussed. Experiments designed to probe the gravitational signature of antimatter are reviewed, and a new space-borne experiment to probe the nature of matter-antimatter interactions is proposed.