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The Cosmos and WIMPs

ABSTRACT. The last two decades have seen significant technological advances in instruments used to study the universe and subatomic particles: the advent of space telescopes like Hubble and others, gravitational wave detection at Fermilab and ever-increasing collision energies at the Large Hadron Collider. These have raised our understanding of the universe but with understanding has come more questions and paradoxes. Both the theory of general relativity and the standard model of quantum theory have continued to be supported by experimental and observational data, however a satisfactory uniting theory is still elusive. This paper is a review of the theories and in particular one anomaly, that of dark matter, which can only be resolved by the simultaneous application of both theories. The weakly interacting massive particle, WIMP, has been a leading candidate for the missing dark matter of the universe but after a decade of searching has not been detected. Recent advances may provide some answers.

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