Abstract Submitted
for the IT05 Meeting of
The American Physical Society

Sorting Category: 1.0 (E)

Dark Matter BENJAMIN BEAMER, Stony Brook University — In the early 1930s, experimental observations of the orbits of stars in the Milky Way (Oort, 1932) and of galaxies within the Coma cluster (Zwicky, 1933) required far more mass to be present in these rotating systems than can be seen from emitted and/or reflected electromagnetic radiation. In this talk, I will begin with the initial discovery of the existence and most basic properties of this dark matter. From here, I will discuss the most popular theories of dark matter before turning to the primary problem of dark matter; the sheer difficulty of observing any phenomena involving dark matter. I will discuss the largely fruitless search for dark matter over the last 80 years, highlighting experiments which have either provided convincing evidence for the existence of dark matter, constrained the possible forms dark matter may take, or both. Finally, I will conclude with a brief discussion of some of the implications of the existence of dark matter.

Abstract

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Date submitted: 07 Oct 2013

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