

Abstract:

Although the first evidence for dark matter was discovered in the 1930s, it was not until the early 1980s that astronomers became convinced that most of the mass holding galaxies and clusters of galaxies together is invisible. For two decades, theories were proposed and challenged, and finally at the beginning of the 21st century the "double dark" standard cosmological model was accepted:

cold dark matter -- a form of matter different from that which makes up the planets, stars, and us -- plus dark energy together make up 95% of the cosmic density. The challenge now is to understand the underlying physics of the particles that make up dark matter and the nature of dark energy. This lecture includes beautiful astronomical videos, and it ends with an illustrated version of David Weinberg's "Dark Matter Rap." It can be enjoyed by everyone, from those who know nothing about modern cosmology to experts in the field.