

The Formation and Evolution of the Cosmic Dust

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Abstract

When and how the formation and evolution of galaxies proceeded is one of the most important problems in astrophysics. From the point of view of the chemical evolution of galaxies, galaxies evolve from a state with low abundance of metals and dust grains to a state with high abundance through the star formation in galaxies. Thus, the understanding of dust evolution is crucially importance to understand the formation and evolution of galaxies. However, despite of its importance, most of the previous works have examined the dust evolution by using some oversimplified assumptions. In this work, we explore the evolution of dust contents, in particular, the total dust amount, the grain size distribution, and the extinction curve in galaxies by constructing a novel theoretical model which includes various processes affecting dust properties in a unified framework.