

Abstract for an Invited Paper  
for the MAR09 Meeting of  
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**The Accelerating Universe<sup>1</sup>**

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Several different types of observations indicate that the universe is accelerating at present, and was decelerating in the recent past. These observations and a model-independent analysis of the data will be discussed. The model-independent, or assumption-free, data analysis method will be applied to determine the expansion and acceleration rates of the universe as functions of redshift, independent of the contents of the universe and of a theory of gravity. A new model-independent function, the dark energy indicator, which provides a measure of deviations of the equation of state at different redshift from predictions in the standard model, will be presented and discussed. The data will be used to solve for the pressure, energy density, equation of state, and potential and kinetic energy densities of the dark energy as functions of redshift without assuming a model or functional form for the dark energy.

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