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Dark Energy in Cosmology

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The observation of distant supernovae moving at speeds greater than that expected has changed our perception of cosmology. It now appears that the current universe is accelerating as opposed to decelerating as thought of previously. To try to explain this acceleration is one of the most important issues in cosmology. A new kind of matter, dubbed dark energy, with negative pressure has been postulated. The most widely accepted model is the so-called ΛCDM model in general relativity. Despite being the best model to date, there are several unresolved issues which motivate researchers to search for better models either in general relativity or in alternative theories of gravity.
In this talk, a review of the standard ΛCDM model in general relativity is first given. Then some other alternative models in general relativity and modified gravity theories is touched upon. Finally, "non-standard"ways of resolving the dark energy problem is briefly mentioned.

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