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**Probing Beyond Einstein: The Joint Dark Energy Mission**

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The discovery of the acceleration of the expansion of the universe in 1998 represents perhaps the most profound challenge to our current understanding of physics and astronomy. The observation of acceleration requires either that more than 70% of the contents of the universe be an exotic form of energy (the so-called “dark energy”) or that there is a flaw in general relativity. The failure of present theories to convincingly explain the effect leads many experts to expect that elucidating the cause of the expansion will lead to fundamental breakthroughs that impact cosmology, astrophysics, and particle physics. The NASA/DOE Joint Dark Energy Mission (JDEM) will be the first of the Beyond Einstein probes. This mission will determine whether the acceleration of the expansion of the universe has varied over time in an attempt to determine the equation of state for dark energy or whether predictions from general relativity fail to adequately explain the acceleration. This talk will present the rationale for a space-based study of dark energy and the techniques likely to be used as part of JDEM.