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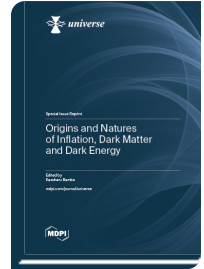
Special Issue Reprint

Origins and Natures of Inflation, Dark Matter and Dark Energy

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Exploring the origins of a field to understand inflation, dark matter, and dark energy is one of the most important problems in modern physics and cosmology. The future detection of primordial gravitational waves is strongly expected to reveal the energy scale of inflation in the early universe. Furthermore, there are two possibilities for the origin of dark matter, namely, new particles in particle-theory models beyond the standard model, and astrophysical objects. In addition, two representative studies have been proposed to elucidate the true character of dark energy, the existence of which leads to late-time cosmic acceleration. One introduces some unknown matter called dark energy with a negative pressure in general relativity. The other modifies gravity at large scales. The latter is called geometrical dark energy. The main aim of this Special Issue is to understand the origins and true natures of inflation, dark matter, and dark energy. We have considered both phenomenological approaches and more fundamental physics such as higher-dimensional gravity theories, quantum gravity, quantum cosmology, physics in the early universe, quantum field theories and gauge field theories in curved spacetime, string theories, brane world models, and the holographic principle. We are hopeful that this Special Issue on inflation, dark matter, dark energy, and the related foundations of physics is of utmost use.



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