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Eternal Inflation and a Geodesically Complete Multiverse

Tuesday 9 April 2024 17:00 (1 hour)

I will discuss the possibility of an eternal universe, a universe with no first moment and no end. The talk will focus on eternal inflation and the key role that inflation plays in resolving cosmological singularities. I will describe how proposed no-go theorems, such as the famous theorem of Borde, Guth and Vilenkin (BGV) are circumvented or obviated. Our exploration encompasses eternal inflating, loitering, and bouncing models, shedding light on the critical aspects that underpin geodesic completeness and the constraints energy conditions in General Relativity impose on such spacetimes. Ignoring the intractable subtleties introduced by quantum considerations, such as rare tunneling events and Boltzmann brains, we will argue that the universe need not have a beginning or an end.

Presenter: EASSON, Damien (Arizona State University)