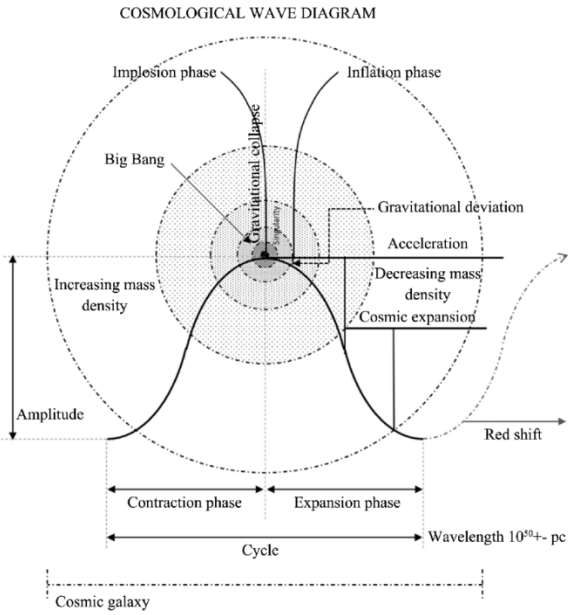
Alan Coley

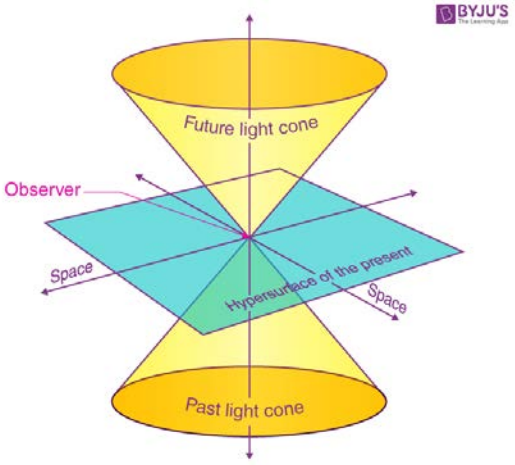
Relativity and Cosmology

Dr. Coley's main interests are in general relativity and mathematical cosmology. His interests in general **relativity** currently include using invariants to characterize solutions of Einsteins field equations (an area of differential geometry) and studying the properties of black hole spacetimes.

Cosmology is currently a very topical field, and there are a number of fundamental and exciting results being obtained in observations and data analysis within physics and astrophysics. Mathematical cosmology concerns investigating the foundations of the theory and attempting to understand the new results in the correct context. This involves using the applied mathematical techniques of differential equations and dynamical systems and various approximation and numerical techniques.



A particular question of interest is how to average the Einstein equations valid on astrophysical scales to scales of relevance for cosmology, thereby underpinning the current standard cosmological framework.



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