Contribution ID: **12** Type: **Talk**

Field-space geometry of cosmological attractors

Thursday 28 November 2019 11:45 (30 minutes)

In this talk, I will discuss the geometry of attractor theories in a cosmological context, showing that theories which feature poles act as unions of multiple canonical models. This means that poles demarcate different field-space domains which may drastically differ in their phenomenology. Usually, studies of attractor theories are confined within the poles; however, moving beyond the poles can be an invaluable tool in identifying novel robust and well-motivated models. As a concrete example, the scalar field responsible for the early-time acceleration of the Universe may reach the boundary of the field-space manifold when outside the poles, indicating that a boundary condition must be imposed in order to determine its late-time behaviour. If the evolution of the field is arrested before this happens, we find that quintessence can be achieved without a potential offset, which is an example of a new model with desirable features. Turning to multifield models with singular kinetic terms, I show that poles generalise straightforwardly to singular curves, acting as "model walls" between distinct pole-free inflationary models. I demonstrate that in this case, the evolution of isocurvature perturbations can be sensitive to where the non-canonical field begins its trajectory. This has far-reaching implications for the initial conditions of attractor theories, since it implies that we must make a fundamental choice as to which domain we impose initial conditions on the fields.

Author: Dr KARAMITSOS, Sotirios (University of Manchester)

Presenter: Dr KARAMITSOS, Sotirios (University of Manchester)

Session Classification: Session 1