

## **Possible resolution of a spacetime singularity with field transformations**

*Friday 5 July 2019 12:10 (20 minutes)*

In this talk, we show that there is a class of spacetime curvature singularities which can be resolved with metric and matter field transformations. As an example, we consider an anisotropic power-law inflation model with gauge and scalar fields in which a space-like curvature singularity exists at the beginning of time. First, we provide a transformation of the metric to the flat geometry. The transformation is regular in the whole region of spacetime except for the singularity. In general, matter fields are still singular after such a metric transformation. However, we explicitly show that there is a case in which the singular behavior of the matter fields can be completely removed by a field re-definition. Since the action is invariant under any metric and matter field transformations, the regularity of the action at the original singularity is a necessary condition for the complete removal of a singularity.

**Co-author:** Prof. NARUKO, Atsushi

**Presenter:** Prof. NARUKO, Atsushi

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