Contribution ID: **62** Type: **Poster presentation**

Flash Talk: Kaluza-Klein inspired a model of inflation with the inverse power-law potential in a Bianchi type-I universe

Thursday, 19 November 2026 15:12 (2 minutes)

This work considers the dynamics of the gauge vector and inflaton (dilaton) fields inspired by Kaluza-Klein theory in an inflationary universe with Bianchi type-I spacetime. The inverse power-law potential of the inflaton field is used to study dynamical system analysis. As a result, all fixed points in the autonomous system are non-hyperbolic fixed points, and one cannot determine their stability. Therefore, a center manifold theory is required to properly analyze the stability of the dynamical system. Interestingly, we found an isotropic attractor point which means that the universe undergoes accelerated expansion (inflation) from an anisotropic phase to an isotropic phase of the universe. According to the dynamical system analysis of the anisotropic Bianchi type-I universe with the inspired Kaluza-Klein model, our results supported the isotropization of the observed universe.

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