



Contribution ID: 2

Type: **not specified**

Cosmological Aspects of Axion-Monopole Interactions

Tuesday 2 December 2025 12:30 (30 minutes)

We propose a minimal and natural dark-sector framework in which dark matter is composed of magnetic monopoles coupled to a light axion field. Through the Witten effect, the axion background induces electric charge on the monopoles, turning them into dyons that in turn modify the axion potential. This monopole-dependent axion mass provides a simple, radiatively stable mechanism for dark-sector interactions and allows the axion to act as a dynamical dark-energy component. The resulting slow evolution of the axion field at late times can naturally produce the polarization rotation associated with the reported CMB cosmic birefringence signal and may also accommodate the evolving dark-energy behavior suggested by recent DESI data. This framework offers a unified and economical explanation for multiple late-time cosmological hints.

Presenter: BAGHERIAN, Hengameh (University of Chicago)