Contribution ID: **38** Type: **not specified**

Unveiling Cosmic Dynamics through f(Q) Gravity

Monday 14 April 2025 18:00 (15 minutes)

In the quest to understand the accelerated expansion of the universe, f(Q) gravity offers a promising alternative to General Relativity (GR) by incorporating non-metricity into the gravitational framework. Unlike GR, which relies on spacetime curvature, f(Q) gravity modifies the Einstein-Hilbert action by replacing the Ricci scalar R with a function f(Q), where Q represents the non-metricity scalar. This study utilizes the Friedmann-Lemaître-Robertson-Walker (FLRW) model to explore how f(Q) gravity affects key cosmological parameters, including the Hubble parameter, energy density, isotropic pressure, and equation of state. By deriving and analyzing the modified Friedmann equations, we examine the role of non-metricity in shaping cosmic evolution. Our findings indicate that f(Q) gravity can effectively model the universe's accelerated expansion, potentially providing new insights into dark energy. These results underscore the potential of f(Q) gravity as a viable framework for addressing outstanding questions in cosmology. Future research could expand upon this work by exploring more complex f(Q) models, paving the way toward a comprehensive theory of gravity that aligns with both observational data and theoretical advancements.

Author: KARAM, Chaymae (Mohammed V University of Rabat, Faculty of Sciences (High Energy Physics Team - Modeling and Simulation))

Presenter: KARAM, Chaymae (Mohammed V University of Rabat, Faculty of Sciences (High Energy Physics Team - Modeling and Simulation))

Session Classification: Session 4 - Modified Gravity & Dark Energy

Track Classification: Talk