



UNIWERSYTET SZCZECIŃSKI
INSTYTUT FIZYKI

Środowe seminarium w Instytucie Fizyki

March 23rd – 12:00

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“The new framework of Ricci Cosmology and its viability”

In Cosmology, the model that best describes our Universe is the Λ CDM model. Despite its strengths, we still face fundamental theoretical challenges. To solve these issues, the hypothesis of a departure from the perfect fluid description of the cosmic fluid has been proposed and represents the core of the framework of Viscous Cosmology. From the study of relativistic dynamics of fluids out of equilibrium in a curved background, the bulk viscous term characterising such a framework is seen just as a first-order departure from equilibrium. Going beyond such approximation, linear terms involving Ricci scalar and Ricci tensor come into play in the bulk pressure. Such terms have given rise to a new cosmological framework, dubbed Ricci Cosmology. Under the assumption of constant transport coefficients parametrising the fluids' response to these new pressure terms, a simple model has been found in which the presence of such pressure terms causes a departure from the perfect fluid redshift scaling for matter components in the Universe. From the second law of thermodynamics, theoretical bounds on the transport coefficients have been found. We show the results obtained from the fit with cosmological data and comment on the feasibility of the model.