

Research topics for Fundamentals of the Universe

1. Geometric models of non-relativistic string theory and quantum gravity (*Bergshoeff, Van der Veen*)
2. Emergence of the baryon asymmetry of the Universe (*Boer, Waalkens*)
3. Observational search for variation of fundamental constants (*Borschevsky, McKean*)
4. Exploring limits of stability and sensitivity using molecules and nanospheres (*Hoekstra, Sterk*)
5. Tension between early and late Universe expansion measurements (*Koopmans, Meerburg*)
6. Symmetries of Kepler problems and dynamics of black holes (*Roest, Seri, Waalkens*)
7. Inflationary Imprints on the cosmological Dark Ages (*Roest, Koopmans, Meerburg*)
8. Catalytic dust surface reactions in the inner solar nebula (*Rudolf, Kamp*)
9. Manifestations of quantum chaos in the cosmic microwave background (*Seri, Waalkens, van de Weijgaert*)
10. Addressing biases in Euclid's cosmic shear measurements and validate new fundamental cosmological models (*Valentijn, Meerburg, Koopmans*)
11. Persistent topology as a tool to probe the primordial Universe (*Van de Weijgaert, Roest, Vegter*)
12. The caustic skeleton of the cosmic web (*Van de Weijgaert, Vegter*)
13. Modelling quantum gravity in a lab with tensor networks (*Van der Veen, Mazumdar*)
14. Combining artificial intelligence and morphology for dark matter searches (*Vecchi, Wilkinson*)
15. Searching the origin of dark matter from theory to gamma-ray observations (*Vecchi, Mazumdar, Peletier*)
16. Fourier analysis as a toolbox to analyse black hole singularities (*Waters, Mazumdar*)

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