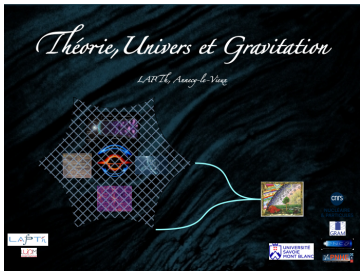

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Revisiting the stochastic QCD axion window: departure from equilibrium during inflation

mercredi 6 novembre 2024 17:00 (20 minutes)

If dark matter is made of QCD axions, its abundance is determined by the vacuum expectation value acquired by the axion field during inflation. The axion is usually assumed to follow the equilibrium distribution arising from quantum diffusion during inflation. This leads to the so-called stochastic window under which the QCD axion can make up all the dark matter. However, in realistic inflationary potentials, I will show that the axion never reaches the equilibrium distribution at the end of inflation. This is because the relaxation time of the axion is much larger than the typical time scale over which H varies during inflation. As a consequence, the axion acquires a quasi-flat distribution as long as it remains light during inflation. This leads to a reassessment of the stochastic axion window.

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