Gravitational Constraints for Fibre Inflation

Alessandro Borys*†[1], Marco Scalisi‡[1], and Alexander Westphal§[2]

[1]University of Catania and INFN – Italy
[2]DESY – Germany

Abstract

I will present the implications of the Weak Gravity Conjecture and the axionic Festina Lente bound for string inflationary models based on K3-fibred Calabi-Yau manifolds in the Large Volume Scenario. Computing the relevant kinetic terms and the associated axion decay constants, I will show how the inflaton field range and the Hubble parameter are bounded by these constraints. Including string-loop and higher-superspace-derivative corrections to the inflationary potential, I will show that only one inflationary branch, corresponding to inflation to the right, survives all quantum gravity consistency bounds, whereas the left branch belongs to the swampland. Models of fibre inflation without higher-derivative corrections are also safe in the landscape.

Keywords: Inflation, Fibre Inflation, Swampland, Axions

*Speaker
†Corresponding author: alessandro.borys@dfa.unict.it
‡Corresponding author: marco.scalisi@dfa.unict.it
§Corresponding author: alexander.westphal@desy.de