



ID contributo: 49

Tipo: Gong Show talk + Poster

Gravitational Axiverse Spectroscopy: Seeing the Forest for the Axions

mercoledì 20 dicembre 2023 16:20 (10 minuti)

We consider inflationary models with multiple spectator axions that couple to dark Abelian gauge sectors. We demonstrate a distinctive phenomenon that make this class of models attractive – we show that separation of the gravitational wave peaks can occur, depending on the axion initial conditions and mass. This leads to a distinctive gravitational wave (GW) forest, whose observation would be a signal that multiple axions exist within the universe. Finally, we elaborate on possible ultraviolet origins of the spectator models utilizing string axions descending from p-form gauge field coupled to D-branes. String theory compactifications generically produce an ‘axiverse’, that is, many of these string axions. Their coupling to D-branes in turn generates CS couplings to dark gauge fields which can be enhanced via multiple brane wrappings and/or fluxes. If these string axions then undergo slow-roll during inflation, they produce GW signals with peaked frequency distribution which are potentially detectable. We discuss the non-trivial requirements for such U(1) gauge field coupled string axions to occur in type IIB string compactifications on Calabi-Yau orientifolds with fluxes, and provide a rudimentary classification of some options.

Autori principali: WESTPHAL, Alexander; DIMASTROGIOVANNI, Emanuela; Dr. LEEDOM, Jacob (DESY); PUTTI, Margherita (Hamburg University UHH - DESY); FASIELLO, Matteo (IFT)

Relatore: PUTTI, Margherita (Hamburg University UHH - DESY)

Classifica Sessioni: Gong Show