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Imprints of Inflaton Fragmentation on Dark Matter Production

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We investigate the production of Weakly Interacting Massive Particles (WIMPs) in the early Universe, focusing on the reheating epoch. Using an inflationary potential approximated by a quartic power law near its minimum, we analyze how inflaton self-interactions trigger exponential growth of inhomogeneities in the field resulting in the fragmentation of the condensate. We study the impact of this fragmentation on the resulting WIMP relic abundance.

Author: BARRETO BASAVE, Francisco (Instituto de Física, UNAM)

Co-author: GARCÍA GARCÍA, Marcos Alejandro (Instituto de Física, UNAM)

Presenter: BARRETO BASAVE, Francisco (Instituto de Física, UNAM)

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