



Contribution ID: 51

Type: **not specified**

## A Tale of Two Candidates: the WIMPlaton and the condensate

*Thursday 25 September 2014 14:40 (20 minutes)*

We show that the decay of the inflaton field may be incomplete, while nevertheless successfully reheating the universe and leaving a stable remnant that accounts for the present dark matter abundance. We note, in particular, that the inflaton field alternately increases and reduces the mass of its decay products as it oscillates about the minimum of its potential. By considering an appropriate discrete symmetry, the inflaton may then be restricted to decay into moderately heavy particles, such that decay is only possible while the amplitude of field oscillations is sufficiently large and the inflaton becomes stable at late times. The oscillating inflaton condensate may also parametrically evaporate into a thermal bath of stable inflaton particles, which eventually decouple and freeze-out, yielding a thermal dark matter relic. We discuss possible embeddings of this generic mechanism within consistent cosmological scenarios, for both single-field and hybrid inflation

**Primary authors:** Dr ROSA, Joao (University of Aveiro); Dr BASTERO-GIL, Mar (University of Granada); Mr CEREZO, Rafael (University of Granada)

**Presenter:** Mr CEREZO, Rafael (University of Granada)

**Session Classification:** Particle Phenomenology