

On the relation between low-scale leptogenesis and dark matter

Coannihilating dark matter: from freeze-in to freeze-out

Laura Lopez Honorez

Mikko Laine

Anika Peter

LHC-friendly avenues for freeze-in dark matter

José Miguel No Redondo

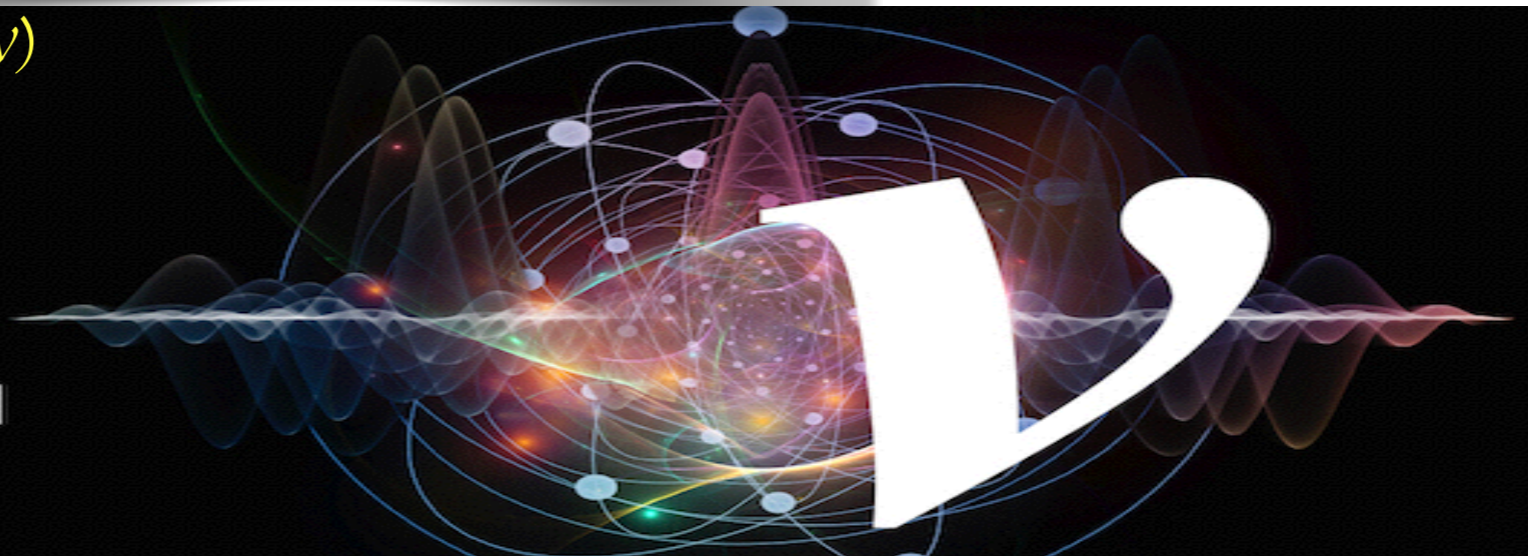
A halo census
CONSENSUS

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NEUTRINOS, DARK MATTER & DARK ENERGY



Resonant leptogenesis & sterile neutrino DM

- Can they work simultaneously? How much fine tuning is needed?
- Uncertainties in theoretical computations?
- Is it possible to access the relevant parameter space with SHiP?

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keV line: X-ray observations

- Statistical fluctuation? Unlikely (significance: $>5\sigma$)
- Unknown systematics? Unlikely (4 telescopes, scales with redshift)
- Atomic transition? Unlikely (even more after Hitomi)

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keV sterile neutrino: Lab searches

- Direct detection: sterile neutrino capture? scattering?
- Production in radioactive decays

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Mechanisms of DM production

- Weak (freeze-out) vs feeble (FIMPs, conversion-driven FO...) couplings
 - sterile neutrinos as FIMPs

FIMP DM more elusive than WIMP DM!

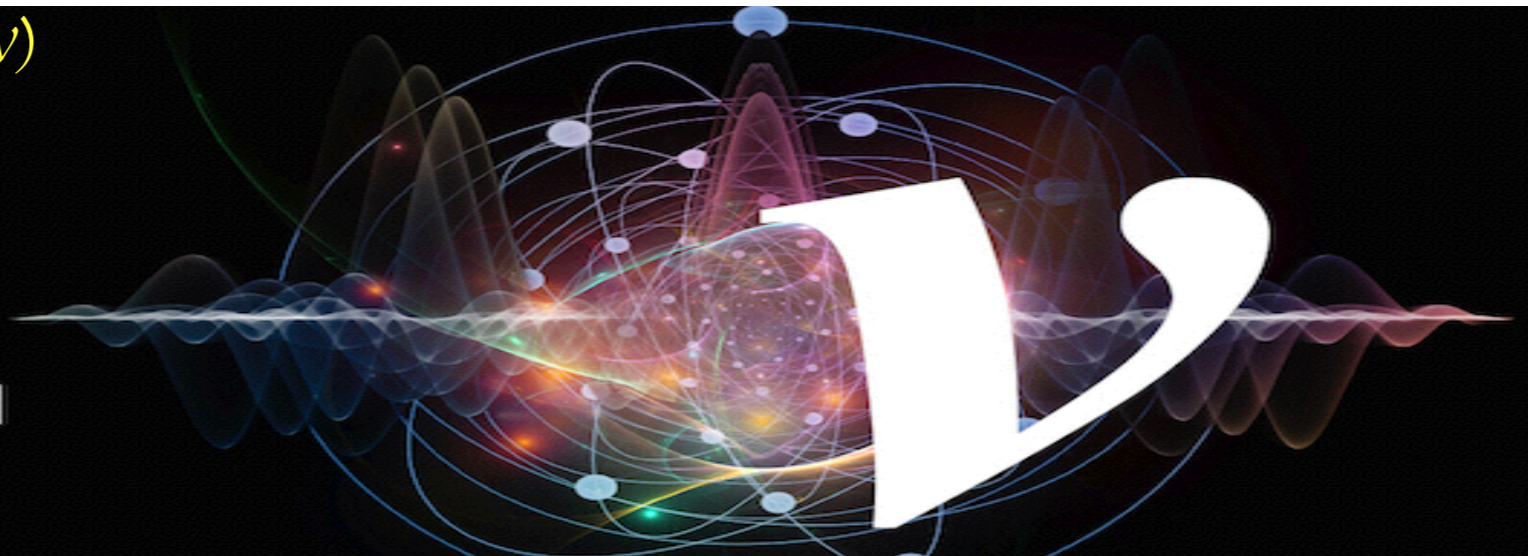
@LHC: long-lived particles coupled to DM (HSCP, DL, DT, Mono-jets, DV)

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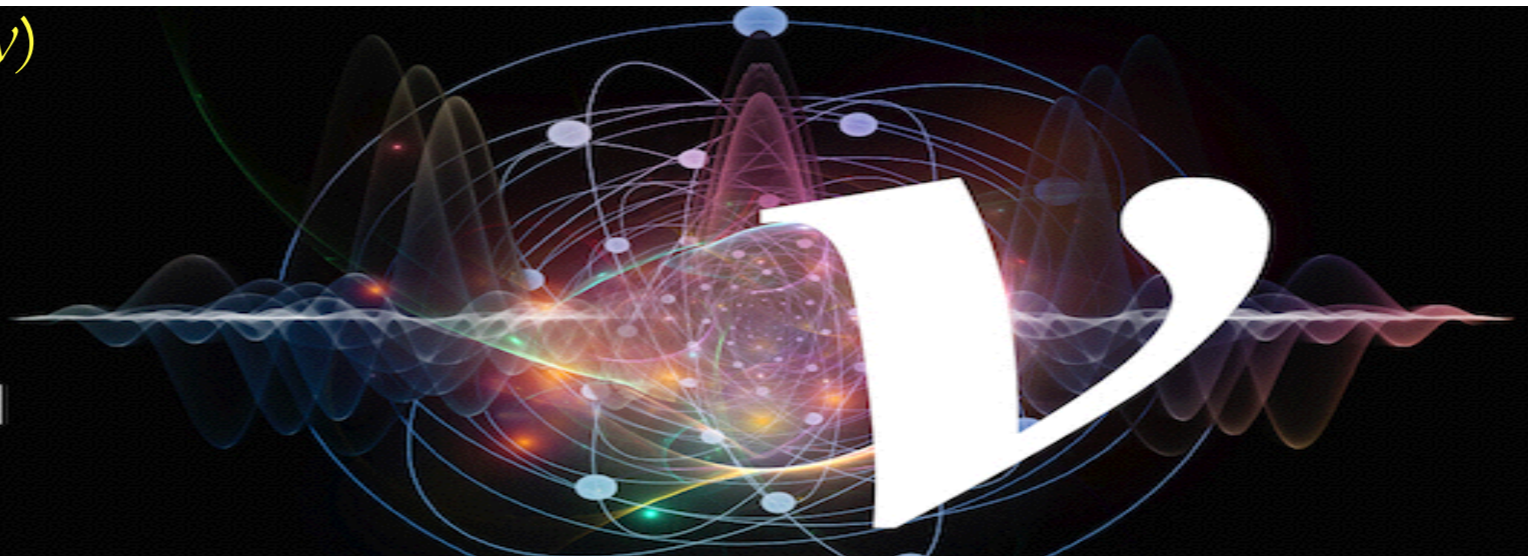
Differences on the matter power spectrum? WDM vs SIDM?

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NON-CDM and structure formation

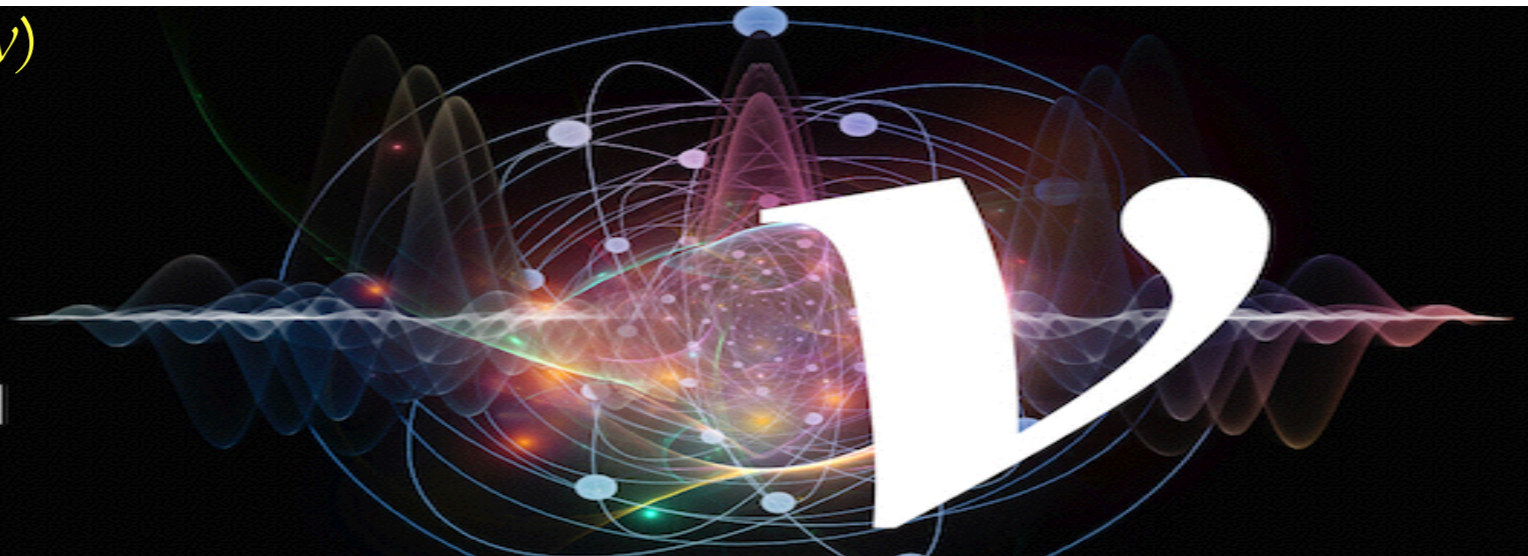
- Matter power spectrum: Lyman- α , 21cm line...
- Number of collapsed structures: DG counts, reionization history...
- Matter distribution within halos: cores vs cusps

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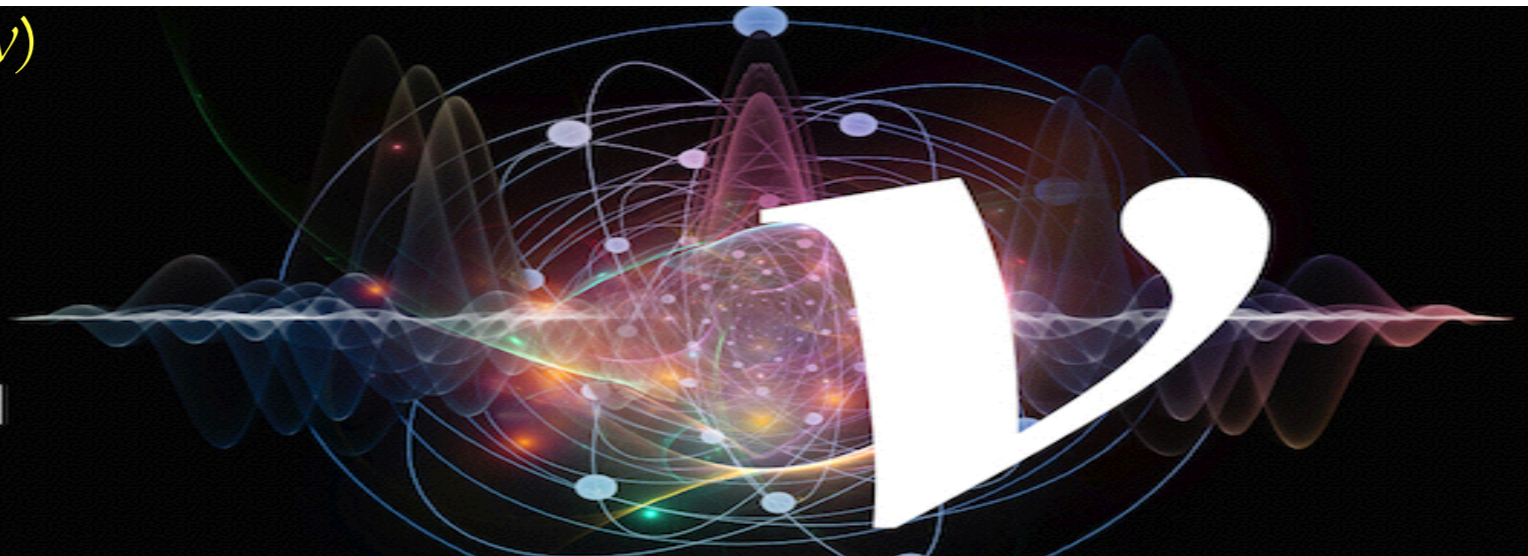
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scale dependence? impact of baryons? is WDM good enough?

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