

# SEMPARIS – Séminaires en région parisienne

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## Particle Physics at LPTHE

**Mardi 16 Mai 2017, 14 :00**

LPTHE, Library

Domaines : hep-ph

Titre : *Chiral Effective Theory of Dark Matter Direct Detection*

Orateur : **Jure Zupan** ( University of Cincinnati and CERN )

Résumé : *I will present the effective field theory for dark matter interactions with the visible sector that is valid at scales of  $O(1 \text{ GeV})$ . Starting with an effective theory describing the interactions of fermionic and scalar dark matter with quarks, gluons and photons via higher dimension operators that would arise from dimension-five and dimension-six operators above electroweak scale, we perform a nonperturbative matching onto a heavy baryon chiral perturbation theory that describes dark matter interactions with light mesons and nucleons. This is then used to obtain the coefficients of the nuclear response functions using a chiral effective theory description of nuclear forces. Our results consistently keep the leading contributions in chiral counting for each of the initial Wilson coefficients.*

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