

Name: Heleen Mulder

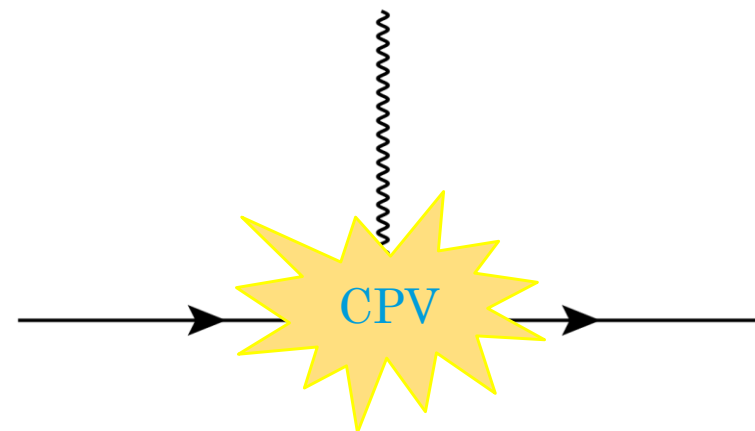
Workplace: Nikhef, Amsterdam
(with Jordy de Vries)

Who am I? 🇳🇱 🇮🇹 🏃 📖 🎤 🎹 🧘 🎬

Physics interests: EFTs, BSM, EDMs, CP violation, (sterile) neutrinos



Electric Dipole Moments



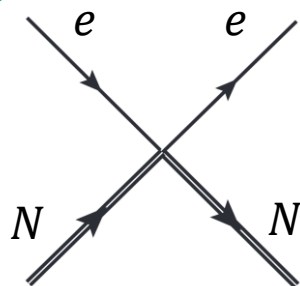
Paramagnetic molecules



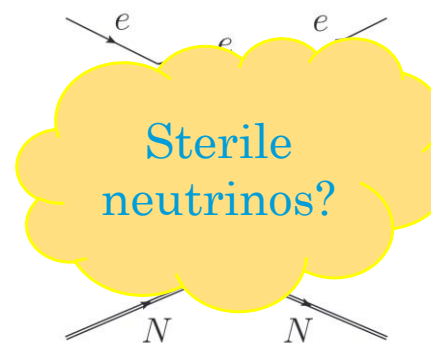
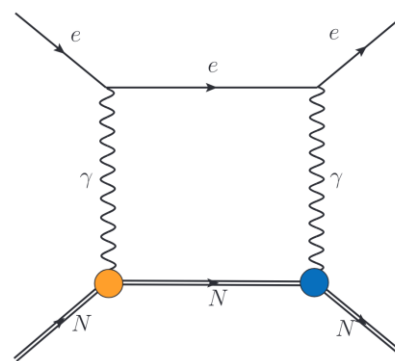
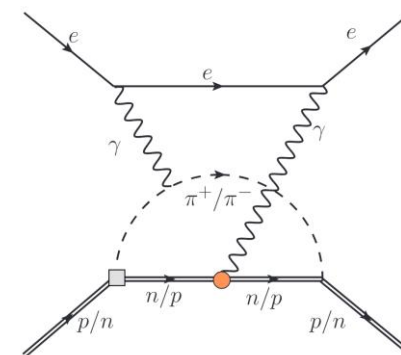
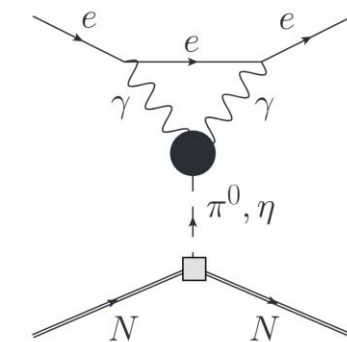
Hf

F

Measure, or set bounds



Particle-level: source of CP violation?



New: bound $\bar{\theta}$ with molecules

Currently:

- $|\bar{\theta}|_{\text{nEDM}} \lesssim 10^{-10}$ (neutron)

PSI 2020, J. Liang et al. 2301.04331

- $|\bar{\theta}|_{\text{HfF}^+} \lesssim 1.5 \times 10^{-8}$ (paramagnetic molecule)

JILA 2022, HM et al. 2502.06406

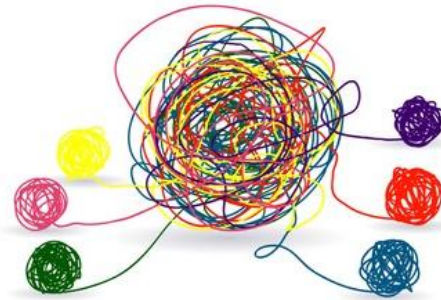
Measurement of
a non-zero EDM

?

CKM phase

QCD $\bar{\theta}$ term

* BSM sources *



Plot by Kseniia Svirina,
ECT* slides 6/3/24

