

Time-varying electric dipole moments, spin-precession effects and variations of fundamental constants induced by ultralight axion and scalar dark matter

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Axion or axionlike dark matter can couple to gluons and fermions, leading to time-varying electric dipole moments and spin-precession effects. Additionally, ultralight axion or scalar dark matter can induce variations of the fundamental constants of nature, such as the particle masses and strengths of fundamental interactions. I discuss the mechanisms involved in generating these effects and associated phenomenological consequences.

References:

- [1] Y. V. Stadnik and V. V. Flambaum, *Physical Review D* 89, 043522 (2014).
- [2] C. Abel et al., *Physical Review X* 7, 041034 (2017).
- [3] C. Smorra, Y. V. Stadnik et al., *Nature* 575, 310 (2019).
- [4] V. V. Flambaum, M. Pospelov, A. Ritz and Y. V. Stadnik, *Physical Review D* 102, 035001 (2020).
- [5] Y. V. Stadnik and V. V. Flambaum, *Physical Review Letters* 114, 161301 (2015).
- [6] Y. V. Stadnik and V. V. Flambaum, *Physical Review Letters* 115, 201301 (2015).

Orateur: STADNIK, Yevgeny (The University of Sydney)