

References for AxionLimits webpage

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1 Axion-photon

Haloscopes

- ABRACADABRA [1, 2]
- ADMX [3, 4, 5, 6]
- ADMX-Sidecar [7, 8]
- ADMX-SLIC [9]
- CAPP [10, 11, 12]
- BASE [13]
- GrAHal [14]
- HAYSTAC [15, 16]
- ORGAN [17]
- QUAX [18, 19]
- RADES [20]
- RBF [21]
- SHAFT [22]
- UF [23]
- UPLOAD-DOWNLOAD [24]
- ABRACADABRA (projection) [25]
- ADBC (projection) [26]
- ADMX (projection) [27]
- aLIGO (projection) [28]
- ALPHA (projection) [29]
- BRASS (projection) [30]
- DM-Radio (projection) [31]
- DANCE (projection) [32]
- LAMPOST (projection) [33]
- MADMAX (projection) [34]
- KLASH (projection) [35]
- ORGAN (projection) [17]
- TOORAD (projection) [36]
- WISPLC (projection) [37]

LSW/Helioscopes

- ALPS [38]
- CAST [39, 40]
- CROWS [41]
- OSQAR [42]
- PVLAS [43]
- SAPPHIRES [44]
- ALPS-II (projection) [45]
- IAXO (projection) [46]
- IAXO (Galactic SN) [47]

Astro

- Bullet Cluster (archival radio data) [48]
- Chandra (Hydra) [49]
- Chandra (M87) [50]
- Chandra (NG7 1275) [51]
- Chandra (H1821+643) [52]
- Chandra (Magnetic white dwarfs) [52]
- COBE/FIRAS+Planck spectral dist. [53]
- Diffuse SN ALPs [54] (see also [55])
- Distance ladder [56]
- Fermi-LAT (NGC 1275) [57]
- Fermi-LAT (Extragalactic SNe) [58]
- HESS (PKS 2155-304) [59]
- Horizontal branch [60]
- Leo T gas temperature [61]
- Mrk 421 (ARGO-YBJ+Fermi): [62]
- Neutron Stars (Foster et al.) [63]
- Neutron Stars (Darling) [64]
- Neutron Stars (Battye et al.) [65]
- Solar neutrinos [66]
- SN1987A- γ [67]
- SN1987A- γ (low mass ALPs) [68]
- SN1987A- γ, ν (high mass ALPs) [69]
- Star clusters [70]
- Telescopes (Haystack) [71]
- Telescopes (MUSE) [72]
- Telescopes (VIMOS) [73]
- Fermi galactic SN (projection) [74]
- THESEUS (projection) [75]
- eROSITA (projection) [76]
- White dwarf initial-final mass relation [77]
- XMM-Newton (decaying DM ALPs) [78]

Cosmology

- Ionisation fraction, EBL, X-rays [79]
- BBN+ N_{eff} [80]

2 Axion-electron

- EDELWEISS [81]
- Magnon non-demolition [82]
- GERDA [83]
- LUX [84]
- Panda-X [85]
- SuperCDMS [86]
- XENON1T [87, 88]
- XENON1T (Solar basin) [89]
- Red giants (ω Cen) [90]
- Solar neutrinos [91]
- Magnons (projection) [92]
- Polaritons (projection) [93]
- DARWIN (projection) [94]
- LZ (projection) [95]
- QUAX [96, 97]
- Semiconductors (projection) [98]
- White dwarf hint [99]

3 Axion-nucleon

Note: CASPER and nEDM limits account for stochastic correction reported in [100]

- CASPER-ZULF-Comagnetometer [101]
- CASPER-ZULF-Sidechain [102]
- nEDM (ultracold neutrons and mercury) [103]
- NASDUCK [104]
- K-3He comagnetometer [105]
- Old comagnetometers [106]
- Torsion balance [107]
- Hot Neutron Star (HESS J1731-347) [108]
- SN1987A Cooling [109]
- SNO (deuterium dissasociation) [110]
- Proton storage ring (projection) [111]
- DM comagnetometer (projection) [106]
- CASPER-wind (projection) [102]

4 Axion-EDM

- CASPER-electric [112]
- nEDM [103]
- SN1987A [113]
- CASPER-electric (projection) [114]
- Storage Ring EDM (projection) [114]

5 Axion mass versus f_a

- BBN [115]
- Binary pulsars and Solar core constraint on $\bar{\theta}$ [116]. I include minor numerical corrections made by [117, 118].
- GW170817 [119]
- nEDM [103]
- SN1987A [120]
- Neutron stars (projection) [116].
- NS-NS and NS-BH Inspirals (projection) [116].

6 Axion theory predictions

6.1 Post-inflation QCD axion

- Ballesteros et al. [121]
- Buschmann et al. 2020 [122]
- Buschmann et al. 2021 [123]
- Bonati et al. [124]
- Borsanyi et al. [125]
- Berkowitz et al. [126]
- Dine et al. [127]
- Petreczky et al. [128]
- Fleury & Moore [129]
- Klaer & Moore [130]

6.2 Other dark matter predictions

- ALP Cogenesis [131]
- Early matter domination [132]
- Post-inflation ALP misalignment [133]
- Trapped misalignment (\mathcal{Z}_N axion) [117]

7 CP-violating couplings

Combined constraints [134]

Scalar-nucleon

- Red giants [135]
- MICROSCOPE [136].
- Eot-Wash [137, 138, 139]
- Irvine [140]. Corrected to 2σ limit by [141]
- HUST [142, 143, 144, 145].
- Stanford [146]
- IUPUI [147].
- Wuhan [141]

Pseudoscalar-electron

- Red giants [135]
- Eot-wash [148]
- NIST [149]
- SMILE [150].
- QUAX [151, 152]
- Washington [153, 154].
- XENON1T [155]
- Magnon (projection) [93]
- QUAX (projection) [151].

Pseudoscalar-nucleon

- Neutron star cooling [108]
- Washington [156]. Limit taken from [157].
- SMILE [150].
- Mainz [158]
- ARIADNE (projection) [159]
- CASPER-wind (projection) [114]
- DM comagnetometer (projection) [106]

8 Black hole superradiance

- Baryakhtar et al. [160] (just Stellar mass BHs)
- Mehta et al. [160] (Stellar mass and SMBHs)
- Stott [161]
- Cardoso et al. [162] (dark photon)

9 Dark photons

Combined constraints [163]

SM photon-DP transitions

- Coulomb [164, 165, 166, 167, 168],
- Plimpton & Lawton's experiment [169, 168]
- Atomic spectroscopy [170]
- Atomic force microscopy (AFM) [168]
- Static magnetic field of the Earth [171, 172]
- Static magnetic field of Jupiter [173, 172].
- ALPs [38]
- SPring-8 [174]
- UWA-LSW [175, 176]
- ADMX-LSW [177]
- CROWS [41].
- TEXONO [178]
- Crab nebula [179]
- COBE and FIRAS [180]

Production in stars

- CAST [181]
- SHIP [182]
- HB and RG stars [183]
- Neutron stars [184]
- Solar neutrinos [185]

Dark matter cosmology/astro

- Arias et al. [133]
- Witte et al. [186, 187]
- Caputo et al. [188, 180],
- IGM [189],
- Leo T dwarf [190]
- Gas clouds [191]

Dark matter experiments

- Reinterpreted axion limits [163]
- DAMIC [192]
- Dark E-field Radio [193]
- DM Pathfinder [194]
- FUNK [195]
- LAMPOST [196]
- MuDHI [197]
- SENSEI [198]
- SHUKET [199]
- SuperCDMS [200]
- SuperMAG [201, 202]
- SQuAD [203],
- Tokyo dish antennae experiments [204, 205, 206]
- WISPDMS [207]
- XENON1T/XENON100 [98, 155, 208, 209].

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