

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, 13]
- BASE [14]
- GrAHal [15]
- HAYSTAC [16, 17]
- ORGAN [18, 19]
- QUAX [20, 21]
- RADES [22]
- RBF [23]
- SHAFT [24]
- TASEH [25]
- SuperMAG [26]
- UF [27]
- UPLOAD-DOWNLOAD [28]
- ABRACADABRA (projection) [29]
- ADBC (projection) [30]
- ADMX (projection) [31]
- aLIGO (projection) [32]
- ALPHA (projection) [33]
- BRASS (projection) [34]
- BREAD (projection) [35]
- CADEx (projection) [36]
- DM-Radio (projection) [37, 38]
- DANCE (projection) [39]
- LAMPOST (projection) [40]
- MADMAX (projection) [41]
- FLASH (projection) [42, 43]
- QUAX (projection) [44]
- ORGAN (projection) [18]
- TOORAD (projection) [45]
- WISPLC (projection) [46]
- SRF heterodyne cavity (projection) [47]

LSW/Helioscopes

- ALPS [48]
- CAST [49, 50]
- CROWS [51]
- OSQAR [52]
- PVLAS [53]
- SAPPHIRES [54]
- ALPS-II (projection) [55]
- IAXO (projection) [56]
- IAXO (Galactic SN) [57]

Astro

- Betelgeuse [58]
- Breakthrough Listen (Doppler shifted radio line in MW) [59]
- Breakthrough Listen (Neutron stars) [60]
- Bullet Cluster (archival radio data) [61]
- Cosmic IR background (hint) [62]
- Chandra (Hydra) [63]
- Chandra (M87) [64]
- Chandra (NG7 1275) [65]
- Chandra (H1821+643) [66]
- Chandra (Magnetic white dwarfs) [66]
- COBE/FIRAS+Planck spectral dist. [67]
- Diffuse SN ALPs [68] (see also [69])
- Distance ladder [70]
- Fermi-LAT (NGC 1275) [71]
- Fermi-LAT (Extragalactic SNe) [72]
- Globular clusters (R parameter) [73]
- Globular clusters (R_2 parameter) [74]
- HAWC (TeV Blazars) [75]
- HESS (PKS 2155-304) [76]
- Leo T gas temperature [77]
- Magnetic white dwarf polarization [78]
- Mrk 421 (ARGO-YBJ+Fermi): [79]
- Neutron Stars (Foster et al.) [80]
- Neutron Stars (Darling) [81]
- Neutron Stars (Battye et al.) [82]
- Pulsar polar cap [83]
- Solar neutrinos [84]
- SN1987A- γ [85]
- SN1987A- γ (low mass ALPs) [86]
- SN1987A- γ, ν (high mass ALPs) [87]
- Low-energy supernovae (ALP decay) [88]
- Solar basin (NuSTAR) [89]
- Star clusters [90]
- Telescopes (Haystack) [91]
- Telescopes (MUSE) [92]
- Telescopes (VIMOS) [93]
- Telescopes (HST) [94]
- Fermi galactic SN (projection) [95]
- THESEUS (projection) [96]
- eROSITA (projection) [97]
- White dwarf initial-final mass relation [98]
- XMM-Newton (decaying DM ALPs) [99]

Cosmology

- Ionisation fraction, EBL, X-rays [100]
- BBN+ N_{eff} [101]

2 Axion-electron

- EDELWEISS [102]
- Magnon non-demolition [103]
- GERDA [104]
- LUX [105]
- Panda-X [106]
- SuperCDMS [107]
- XENON1T [108, 109]
- XENONnT [in prep.]
- XENON1T (Solar basin) [110]
- Red giants (ω Cen) [111]
- Solar neutrinos [112]
- Magnons (projection) [113]
- Polaritons (projection) [114]
- DARWIN (projection) [115]
- LZ (projection) [116]
- QUAX [117, 118]
- Semiconductors (projection) [119]
- White dwarf hint [120]
- X-rays (1-loop decay) [121]

3 Axion-nucleon

Note: CASPER and nEDM limits account for stochastic correction reported in [122]

- CASPER-ZULF-Comagnetometer [123]
- CASPER-ZULF-Sidechain [124]
- nEDM (ultracold neutrons and mercury) [125]
- NASDUCK [126]
- K-3He comagnetometer [127]
- Old comagnetometers [128]
- Torsion balance [129]
- Neutron star cooling [130] (corrected from [131])
- SN1987A Cooling [132]
- SNO (deuterium dissasociation) [133]
- Proton storage ring (projection) [134]
- DM comagnetometer (projection) [128]
- CASPER-wind (projection) [124]

4 Axion-EDM

- Beam EDM [135]
- CASPER-electric [136]
- nEDM [125]
- HfF⁺ [137]
- SN1987A [138]
- *Planck*+BAO thermal axion bound [139]
- CASPER-electric (projection) [140]
- Storage Ring EDM (projection) [140]

5 Axion mass versus f_a

- BBN [141]
- Beam EDM [135]
- Binary pulsars and Solar core constraint on $\bar{\theta}$ [142]. I include minor numerical corrections made by [143, 144].
- GW170817 [145]
- HfF⁺ [137]
- nEDM [125]
- Piezoaxionic effect (projection) [146]
- SN1987A [138]
- Neutron stars (projection) [142].
- NS-NS and NS-BH Inspirals (projection) [142].

6 Axion theory predictions

6.1 Post-inflation QCD axion

- Ballesteros et al. [147]
- Buschmann et al. 2020 [148]
- Buschmann et al. 2021 [149]
- Bonati et al. [150]
- Borsanyi et al. [151]
- Berkowitz et al. [152]
- Dine et al. [153]
- Petreczky et al. [154]
- Fleury & Moore [155]
- Klaer & Moore [156]

6.2 Other dark matter predictions

- ALP Cogenesis [157]
- Early matter domination [158]
- Post-inflation ALP misalignment [159]
- Trapped misalignment ($\mathcal{Z}_{\mathcal{N}}$ axion) [143]

7 CP-violating couplings

Combined constraints [160]

Scalar-nucleon

- Red giants [161]
- MICROSCOPE [162].
- Eot-Wash [163, 164, 165]
- Irvine [166]. Corrected to 2σ limit by [167]
- HUST [168, 169, 170, 171].
- Stanford [172]
- IUPUI [173].
- Wuhan [167]

Pseudoscalar-electron

- Red giants [161]
- Eot-wash [174]
- NIST [175]
- SMILE [176].
- QUAX [177, 178]
- Washington [179, 180].
- XENON1T [181]
- Magnon (projection) [114]
- QUAX (projection) [177].

Pseudoscalar-nucleon

- Neutron star cooling [131]
- Washington [182]. Limit taken from [183].
- SMILE [176].
- Mainz [184]
- ARIADNE (projection) [185]
- CASPER-wind (projection) [140]
- DM comagnetometer (projection) [128]

8 Black hole superradiance

- Baryakhtar et al. [186] (just Stellar mass BHs)
- Mehta et al. [186] (Stellar mass and SMBHs)
- Stott [187]
- Ünal et al. [188] (Quasars)
- Cardoso et al. [189] (dark photon)

9 Dark photons

Combined constraints [190]

SM photon-DP transitions

- Coulomb [191, 192, 193, 194, 195],
- Plimpton & Lawton's experiment [196, 195]
- Atomic spectroscopy [197]
- Atomic force microscopy (AFM) [195]
- Static magnetic field of the Earth [198, 199, 200]
- Static magnetic field of Jupiter [201, 200].
- ALPs [48]
- SPring-8 [202]
- UWA-LSW [203, 204]
- ADMX-LSW [205]
- CROWS [51].
- TEXONO [206]
- Crab nebula [207]
- COBE and FIRAS [208]

Production in stars

- CAST [209]
- SHIP [210]
- HB and RG stars [211]
- Neutron stars [212]
- Solar neutrinos [213]

Dark matter cosmology/astro

- Arias et al. [159]
- Witte et al. [214, 215]
- Caputo et al. [216, 208],
- IGM [217],
- Leo T dwarf [218]
- Gas clouds [219]

Dark matter experiments

- Reinterpreted axion limits [190]
- BREAD (projection) [35]
- DAMIC [220]
- Dark E-field Radio [221]
- DM Pathfinder [222]
- DOSUE-RR [223]
- FAST Radio antenna [224]
- FUNK [225]
- LAMPOST [226]
- MuDHI [227]
- ORPHEUS [228]
- SENSEI [229]
- SHUKET [230]
- SuperCDMS [231]
- SuperMAG [232, 233]
- SQuAD [234],
- SQMS [235],
- Tokyo dish antennae experiments [236, 237, 238]
- WISPDMS [239]
- XENON(100,1T,nT) [119, 181, 240, 241, 242, 243].

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