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, 14, 15]
- CAST-CAPP [16]
- BASE [17]
- GrAHal [18]
- HAYSTAC [19, 20]
- ORGAN [21, 22]
- QUAX [23, 24, 25]
- RADES [26]
- RBF [27]
- SHAFT [28]
- TASEH [29]
- SuperMAG [30]
- UF [31]
- UPLOAD-DOWNLOAD [32]
- ABRACADABRA (projection) [33]
- ADBC (projection) [34]
- ADMX (projection) [35]
- aLIGO (projection) [36]
- ALPHA (projection) [37]
- BRASS (projection) [38]
- BREAD (projection) [39]
- CADEx (projection) [40]
- DM-Radio (projection) [41, 42]
- DANCE (projection) [43]
- LAMPOST (projection) [44]
- MADMAX (projection) [45]
- FLASH (projection) [46, 47]
- QUAX (projection) [48]
- ORGAN (projection) [21]
- TOORAD (projection) [49]
- WISPLC (projection) [50]
- SRF heterodyne cavity (projection) [51]

LSW/Helioscopes

- ALPS [52]
- CAST [53, 54]
- CROWS [55]
- OSQAR [56]
- PVLAS [57]
- SAPPHIRES [58, 59]
- ALPS-II (projection) [60]
- IAXO (projection) [61]
- IAXO (Galactic SN) [62]

Astro

- Betelgeuse [63]
- Breakthrough Listen (Doppler shifted radio line in MW) [64]
- Breakthrough Listen (Neutron stars) [65]
- Bullet Cluster (archival radio data) [66]
- Cosmic IR background (hint) [67]
- Chandra (Hydra) [68]
- Chandra (M87) [69]
- Chandra (NG7 1275) [70]
- Chandra (H1821+643) [71]
- Chandra (Magnetic white dwarfs) [71]
- COBE/FIRAS+Planck spectral dist. [72]
- Diffuse SN ALPs [73] (see also [74])
- Distance ladder [75]
- Fermi-LAT (NGC 1275) [76]
- Fermi-LAT (Extragalactic SNe) [77]
- Fermi-LAT (Quasars) [78]
- Globular clusters (R parameter) [79]
- Globular clusters (R_2 parameter) [80]
- HAWC (TeV Blazars) [81]
- HESS (PKS 2155-304) [82]
- INTEGRAL (ALP decay) [83]
- Leo T gas temperature [84]
- Magnetic white dwarf polarization [85]
- Mrk 421 (ARGO-YBJ+Fermi): [86]
- Mrk 421 (ARGO-YBJ+MAGIC): [87]
- Neutron Stars (Foster et al.) [88]
- Neutron Stars (Darling) [89]
- Neutron Stars (Battye et al.) [90]
- Pulsar polar cap [91]
- Solar neutrinos [92]
- SN1987A-γ [93]
- SN1987A-γ (low mass ALPs) [94]
- SN1987A-γ,ν (high mass ALPs) [95]
- Low-energy supernovae (ALP decay) [96]
- Solar basin (NuSTAR) [97]
- Star clusters [98]
- Telescopes (Haystack) [99]
- Telescopes (MUSE) [100]
- Telescopes (VIMOS) [101]
- Telescopes (HST) [102]
- Fermi galactic SN (projection) [103]
- THESEUS (projection) [104]
- eROSITA (projection) [105]
- White dwarf initial-final mass relation [106]
- XMM-Newton (decaying DM ALPs) [107]

Cosmology

- Ionisation fraction, EBL, X-rays [108]
- BBN+$N_{\rm eff}$ [109]
- Freeze in [110]

2 Axion-electron

- EDELWEISS [111]
- Magnon non-demolition [112]
- GERDA [113]
- LUX [114]
- Panda-X [115]
- SuperCDMS [116]
- XENON1T [117, 118]
- XENONnT [in prep.]
- XENON1T (Solar basin) [119]
- Red giants (ωCen) [120]
- Solar neutrinos [121]
- Magnons (projection) [122]
- Polaritons (projection) [123]
- DARWIN (projection) [124]
- LZ (projection) [125]
- QUAX [126, 127]
- Semiconductors (projection) [128]
- White dwarf hint [129]
- Freeze-in irreducible axions [110]
- X-rays (1-loop decay) [130]

3 Axion-nucleon

Note: CASPEr and nEDM limits account for stochastic correction reported in [131]

- CASPEr-ZULF-Comagnetometer [132]
- CASPEr-ZULF-Sidechain [133]
- nEDM (ultracold neutrons and mercury) [134]
- NASDUCK [135, 136]
- K-3He comagnetometer (fifth force) [137]
- K-3He comagnetometer (dark matter) [138]
- JEDI [139]
- Old comagnetometers [140]
- Torsion balance [141]
- Neutron star cooling [142] (corrected from [143])
- SN1987A Cooling [144]
- SNO (deuterium dissasociation) [145]
- Proton storage ring (projection) [146]
- DM comagnetometer (projection) [140]
- CASPEr-wind (projection) [133]

4 Axion-EDM

- Beam EDM [147]
- CASPEr-electric [148]
- nEDM [134]
- HfF^+ [149]
- JEDI [139]
- SN1987A [150]
- *Planck*+BAO thermal axion bound [151]
- CASPEr-electric (projection) [152]
- Storage Ring EDM (projection) [152]

5 Axion mass versus f_a

- BBN [153]
- Beam EDM [147]
- Binary pulsars and Solar core constraint on $\bar{\theta}$ [154]. I include minor numerical corrections made by [155, 156].
- GW170817 [157]
- HfF^+ [149]
- JEDI [139]
- nEDM [134]
- Piezoaxionic effect (projection) [158]
- SN1987A [150]
- Neutron stars (projection) [154].
- NS-NS and NS-BH Inspirals (projection) [154].
- White dwarfs [159]

6 Axion theory predictions

6.1 Post-inflation QCD axion

- Ballesteros et al. [160]
- Buschmann et al. 2020 [161]
- Buschmann et al. 2021 [162]
- Bonati et al. [163]
- Borsanyi et al. [164]
- Berkowitz et al. [165]
- Dine et al. [166]
- Petreczky et al. [167]
- Fleury & Moore [168]
- Klaer & Moore [169]

6.2 Other dark matter predictions

- ALP Cogenesis [170]
- Early matter domination [171]
- Post-inflation ALP misalignment [172]
- Trapped misalignment ($\mathcal{Z}_\mathcal{N}$ axion) [155]

7 CP-violating couplings

Combined constraints [173]

Scalar-nucleon

- Red giants [174]
- MICROSCOPE [175].
- Eot-Wash [176, 177, 178]
- Irvine [179]. Corrected to 2σ limit by [180]
- HUST [181, 182, 183, 184].
- Stanford [185]
- IUPUI [186].
- Wuhan [180]

Pseudoscalar-electron

- Red giants [174]
- Eot-wash [187]
- NIST [188]
- SMILE [189].
- QUAX [190, 191]
- Washington [192, 193].
- XENON1T [194]
- Magnon (projection) [123]
- QUAX (projection) [190].

Pseudoscalar-nucleon

- Neutron star cooling [143]
- Washington [195]. Limit taken from [196].
- SMILE [189].
- Mainz [197]
- ARIADNE (projection) [198]
- CASPEr-wind (projection) [152]
- DM comagnetometer (projection) [140]

8 Black hole superradiance

- Baryakhtar et al. [199] (just Stellar mass BHs)
- Mehta et al. [199] (Stellar mass and SMBHs)
- Stott [200]
- Ünal et al. [201] (Quasars)
- Cardoso et al. [202] (dark photon)

9 Dark photons

Combined constraints [203]

SM photon-DP transitions

- Coulomb [204, 205, 206, 207, 208],
- Plimpton & Lawton's experiment [209, 208]
- Atomic spectroscopy [210]
- Atomic force microscopy (AFM) [208]
- Static magnetic field of the Earth [211, 212, 213]
- Static magnetic field of Jupiter [214, 213].
- ALPs [52]
- SPring-8 [215]
- UWA-LSW [216, 217]
- ADMX-LSW [218]
- CROWS [55].
- TEXONO [219]
- Crab nebula [220]
- COBE and FIRAS [221]

Production in stars

- CAST [222]
- SHIP [223]
- HINODE [224]
- HB and RG stars [225]
- Neutron stars [226]
- Solar neutrinos [227]

Dark matter cosmology/astro

- Arias et al. [172]
- Witte et al. [228, 229]
- Caputo et al. [230, 221],
- IGM [231],
- Leo T dwarf [232]
- Gas clouds [233]

Dark matter experiments

- Reinterpreted axion limits [203]
- BREAD (projection) [39]
- DAMIC [234]
- Dark E-field Radio [235]
- DM Pathfinder [236]
- DOSUE-RR [237]
- FAST Radio antenna [238]
- FUNK [239]
- LAMPOST [240]
- MuDHI [241]
- ORPHEUS [242]
- QUALIPHIDE [243]
- Quantum cyclotron [244]
- SENSEI [245]
- SHUKET [246]
- SuperCDMS [247]
- SuperMAG [248, 249]
- SQuAD [250],
- SQMS [251],
- Tokyo dish antennae experiments [252, 253, 254]
- WISPDMX [255]
- XENON(100,1T,nT) [128, 194, 256, 257, 258, 259].

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