References for AxionLimits webpage

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1 Axion-photon

Haloscopes

- ABRACADABRA [1, 2]
- ADBC [3]
- ADMX [4, 5, 6, 7, 8]
- ADMX-Sidecar [9, 10]
- ADMX-SLIC [11]
- CAPP [12, 13, 14, 15, 16, 17, 18, 19, 20, 21]
- CAST-CAPP [22]
- DANCE [23]
- BASE [24]
- GrAHal [25]
- HAYSTAC [26, 27, 28, 29, 30]
- LIDA [31]
- MADMAX [32]
- ORGAN [33, 34, 35, 36]
- QUAX [37, 38, 39, 40, 41]
- RADES [42, 43]
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- OPAL [207]
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- Electron g-2 [216]
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- Fermionic axion interferometer [218]
- Magnon non-demolition [219]
- DarkSide-50 [220]
- GERDA [221]
- LUX [222]
- Old comagnetometers [223]
- Panda-X [224, 225, 226]
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- XENONnT [232]
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- Red giants (ωCen) [234]
- Solar neutrinos [235]
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- Axion wind multilayer (projection) [237]
- Magnons (projection) [238]
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- YIG (projection) [238]
- White dwarf hint [249]
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4 Axion-nucleon

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- CASPEr-ZULF-Sidechain [254]
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- Hefei Spin-based amplifiers [257]
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- NASDUCK [259, 260]
- PSI HgM (nEDM) [261]
- K-3He comagnetometer (fifth force) [262]
- K-3He comagnetometer (dark matter) [263]
- Mainz-Krakow comagnetometers [264]
- JEDI [265]
- Old comagnetometers [223]
- Torsion balance [266]
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- SN1987A Cooling [269, 270]
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- Xe-129 fifth force [273]
- Proton storage ring (projection) [274]
- Electrostatic storage ring (projection) [236]
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- CASPEr-gradient (projection) [254]
- Superfluid helium-3 HPD (projection) [275]
- MnCO3 (projection) [276]

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- Beam EDM [278]
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- CASPEr-electric [280]
- nEDM [258]
- HfF^+ [281]
- I_2^+/Ca^+ [282]
- JEDI [265]
- ONIX [283]
- Rb/Quartz [284]
- SN1987A [285, 286]
- *Planck*+BAO thermal axion bound [287]
- CASPEr-electric (projection) [288]
- Storage Ring EDM (projection) [288]
- Polarisation haloscope (projection) [289]

6 Axion-top

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7 Axion mass versus f_a

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- Beam EDM [278]
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- GW170817 [295]
- HfF^+ [281]
- MICROSCOPE [296]
- Rb/Quartz [284]
- JEDI [265]
- nEDM [258]
- Tritium decay [297]
- 40K decay [298]
- Yb+ E3/E2 [299]
- Piezoaxionic effect (projection) [300]
- *Planck*+BAO thermal axion bound [287]
- SN1987A [285, 286]
- Neutron stars (projection) [292].
- NS-NS and NS-BH Inspirals (projection) [292].
- White dwarfs [301]
- Polarisation haloscope (projection) [289]
- Neutron star cooling (Gomez-Banon et al. [302], Kumamoto et al. [303])

7.1 Black hole superradiance

- Baryakhtar et al. [304] (just Stellar mass BHs)
- Mehta et al. [304] (Stellar mass and SMBHs)
- Stott [305]
- Ünal et al. [306] (Quasars)

- Hoof et al. [307]
- Witte and Mummery [308]
- Cardoso et al. [309] (dark photon)

8 Axion theory predictions

8.1 Post-inflation QCD axion

- Ballesteros et al. [310]
- Buschmann et al. 2020 [311]
- Buschmann et al. 2021 [312]
- Benabou et al. 2024 [313]
- Bonati et al. [314]
- Borsanyi et al. [315]
- Berkowitz et al. [316]
- Dine et al. [317]
- Petreczky et al. [318]
- Fleury & Moore [319]
- Klaer & Moore [320]
- Gorghetto et al. [321]
- Saikawa et al. (2019) [90]
- Saikawa et al. (2024) [322]
- Beyer et al. (2023) [323]
- Kim et al. (2024) [324]

8.2 Other dark matter predictions

- ALP Cogenesis [325]
- Early matter domination [326]
- Post-inflation ALP misalignment [327, 328]
- Trapped misalignment ($\mathcal{Z}_\mathcal{N}$ axion) [293]

9 CP-violating couplings

Combined constraints [329]

Scalar-nucleon

- Red giants [330]
- MICROSCOPE [331].
- Eot-Wash [332, 333, 334]
- Irvine [335]. Corrected to 2σ limit by [336]
- HUST [337, 338, 339, 340].
- Stanford [341]
- IUPUI [342].
- Wuhan [336]

Pseudoscalar-electron

- Red giants [330]
- Eot-wash [343]
- e^+e^- Penning trap [344]
- NIST [345]
- SMILE [346]
- Perihelion shift [347]
- QUAX [348, 349, 350]
- Washington [227, 351].
- XENON1T [352]
- ACME (projection) [353]
- Magnon (projection) [239]
- QUAX (projection) [348].

Pseudoscalar-nucleon

- Neutron star cooling [267]
- Hefei (Earth) [354]
- Hefei (mm) [355]
- Washington [356]. Limit taken from [357].
- SMILE [346].
- Mainz [358]
- Moon/Sun [359]
- Yb trap (projection) [353]
- ARIADNE (projection) [360]
- CASPEr-wind (projection) [288]
- DM comagnetometer (projection) [223]
- Fifth force Ne-Rb-K comagnetometer (projection) [361]

10 Scalars

Scalar-photon

- Globular clusters [122]
- Eot-Wash (EP) [362]
- Fifth force [363, 364, 365, 366]
- MICROSCOPE [331]
- AURIGA [367]
- BACON [368]
- Cs/Cav [369]
- DAMNED [370]
- Dy/Dy [371]
- Dy/Quartz [284]
- Dynamic Decoupling [372]
- GEO600 [373]
- LIGO O3 [374], see also [375]
- Holometer [376]
- H/Quartz/Sapphire [377]
- PTB (Yb+, Sr clock) [378]
- I_2 [379]
- Rb/Cs [380]
- Sr/Si [381]
- QSNET [382]
- QSNET (projection) [383]
- AEDGE (projection) [384]
- AION (projection) [384]
- DUAL (projection) [385]
- MAGIS (projection) [386]
- Nuclear clock (projection) [387]
- Mechanical Resonators (projection) [388]

Scalar-electron

- Red giants [330]
- White dwarfs [389]
- Eot-Wash (EP) [362]
- Fifth force [363, 364, 365, 366]
- MICROSCOPE [331]
- AURIGA [367]
- Cavities [390]
- Cs/Cav [369]
- DAMNED [370]
- GEO600 [373]
- Holometer [376]
- H/Quartz/Sapphire [377]
- LIGO O3 [374], see also [375]
- I_2 [379]
- H/Si [381]
- Rb/Quartz [284]
- Yb/Cs [391]
- NANOGrav 15-year PTA [392]
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- DUAL (projection) [385]
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- Optical microwave clock (projection) [395]
- Optical cavities [396]
- SrOH [397]
- Mechanical Resonators (projection) [388]
- IPTA (mock data) [398]

11 Vectors

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- Casimir [399, 400, 401]
- Eot-Wash (EP) [402]
- Eot-Wash (ISL) [403]
- MICROSCOPE [404]
- DM stability [405]
- Horizontal branch [406]
- Red giant [406]
- Sun [406]
- Eot-Wash (DM) [407]
- KAGRA (DM) [408]
- LIGO (O1) [409]
- LIGO/VIRGO [409]
- LISA Pathfinder [410, 411]
- PPTA [412]
- POLONAISE [413]
- Asteroids (projection) [414]
- HELIOS (projection) [394]
- LISA (projection) [414]
- MAGIS (projection) [386]
- Optomechanical membranes (projection) [415]
- SKA (projection) [416]
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- STE-QUEST (projection) [417]

12 Dark photons

Combined constraints [418]

SM photon-DP transitions

- Coulomb [419, 420, 421, 422, 423],
- Plimpton & Lawton's experiment [424, 423]
- Atomic spectroscopy [425]
- Atomic force microscopy (AFM) [423]
- Static magnetic field of the Earth [426, 427, 428]
- Static magnetic field of Jupiter [429, 428].
- Jupiter B-field/Juno mission [430]
- ALPs [79]
- ALPS-II (projection) [431]
- SPring-8 [432]
- UWA-LSW [433, 434]
- ADMX-LSW [435]
- CROWS [83].
- DarkSRF [436]
- DarkSRF (projection) [437]
- TEXONO [438]
- Crab nebula [439]
- COBE and FIRAS [440]
- STAX (projection) [441]

Production in stars

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- SHIPS [443]
- HINODE [444]
- IAXO (modified for longitudinal mode) [445]
- New globular cluster bound [446]
- Old stellar bounds: Solar-L, HB and RG stars [406] (see also [447])
- Neutron stars [448]
- Solar neutrinos [449]
- XENON1T [450]

Dark matter cosmology/astro

- Blazars [451]
- Dark matter, Arias et al. [327]
- Dark matter, Witte et al. [452, 453]
- COBE/FIRAS, Caputo et al. [454, 440]
- COBE/FIRAS with Spectral distortions [455, 456]
- Lyman-alpha [457]
- ISM [458],
- Leo T dwarf [459]
- Gas clouds [459, 460]
- JWST [461]
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- FAST Radio antenna [476]
- FUNK [477]
- GigaBREAD [478]
- Hefei haloscope [479]
- MADMAX [480]
- LAMPOST [481]
- LOFAR (solar corona) [482]
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- ORGAN [484, 36]
- ORPHEUS [485]
- QUALIPHIDE [486]
- Quantum cyclotron [487]
- SENSEI [488]
- SHUKET [489]
- SuperCDMS [490]
- SuperMAG [491, 492, 49]
- SQuAD [493],
- SQMS [494],
- SUPAX [495]
- SRF scanning [496]
- Tokyo dish antennae experiments [497, 498, 499]
- WISPDMX [500]
- XENON(100,1T,nT) [501, 352, 502, 503, 450, 504].

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