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, 21]
- ORGAN [22, 23]
- QUAX [24, 25, 26]
- RADES [27]
- RBF [28]
- SHAFT [29]
- TASEH [30]
- SuperMAG [?]
- UF [31]
- UPLOAD-DOWNLOAD [32]
- ABRACADABRA (projection) [33]
- ADBC (projection) [34]
- ADMX (projection) [35]
- aLIGO (projection) [36]
- ALPHA (projection) [37, 38]
- BRASS (projection) [39]
- BREAD (projection) [40]
- CADEx (projection) [41]
- DM-Radio (projection) [42, 43]
- DANCE (projection) [44]
- LAMPOST (projection) [45]
- MADMAX (projection) [46]
- FLASH (projection) [47, 48]
- QUAX (projection) [49]
- ORGAN (projection) [22]
- TOORAD (projection) [50]
- Twisted Anyon Cavity (projection) [51]
- WISPLC (projection) [52]
- SRF heterodyne cavity (projection) [53]

LSW/Helioscopes

- ALPS [54]
- CAST [55, 56]
- CROWS [57]
- OSQAR [58]
- PVLAS [59]
- SAPPHIRES [60, 61]
- ALPS-II (projection) [62]
- IAXO (projection) [63]
- IAXO (Galactic SN) [64]

Astro

- Axion star explosions [65]
- Betelgeuse [66]
- BICEP/KECK [67]
- Breakthrough Listen (Doppler shifted radio line in MW) [68]
- Breakthrough Listen (Neutron stars) [69]
- Bullet Cluster (archival radio data) [70]
- Cosmic IR background (hint) [71]
- Chandra (Hydra) [72]
- Chandra (M87) [73]
- Chandra (NG7 1275) [74]
- Chandra (H1821+643) [75]
- COBE/FIRAS+Planck spectral dist. [76]
- Diffuse gamma-rays [77]
- Diffuse SN ALPs [78] (see also [79])
- Distance ladder [80]
- Fermi-LAT (NGC 1275) [81]
- Fermi-LAT (Extragalactic SNe) [82]
- Fermi-LAT (Quasars) [83]
- Gamma-ray attenuation (ALP dark matter) [84]
- Globular clusters (R parameter) [85]
- Globular clusters (R_2 parameter) [86]
- HAWC (TeV Blazars) [87]
- HESS (PKS 2155-304) [88]
- INTEGRAL (ALP decay) [89]
- Leo T gas temperature [90]
- Magnetic white dwarfs (X-rays) [91]
- Magnetic white dwarf (polarization) [92]
- MOJAVE [93]
- Mrk 421 (ARGO-YBJ+Fermi): [94]
- Mrk 421 (ARGO-YBJ+MAGIC): [95]
- Neutron Stars (Foster et al.) [96]
- Neutron Stars (Darling) [97]
- Neutron Stars (Battye et al.) [98]
- Planck cosmic birefringence [99]
- PPTA+QUIJOTE [100]
- Pulsar polarisation arrays (projection) [101]
- Pulsar polar cap [102]
- Red supergiant [103]
- Solar neutrinos [104]
- SN1987A-γ (ALP decay) [105, 106]
- SN1987A-γ (low mass ALP conversion) [107, 106]
- SN1987A-γ,ν (high mass ALPs) [108]
- Low-energy supernovae (ALP decay) [77]
- Solar basin (NuSTAR) [109]
- Star clusters [110]
- SPT [111]
- Telescopes (Haystack) [112]
- Telescopes (MUSE) [113]
- Telescopes (VIMOS) [114]
- Telescopes (HST) [115, 116]
- Fermi galactic SN (projection) [117]
- THESEUS (projection) [118]
- eROSITA (projection) [119]
- White dwarf initial-final mass relation [120]
- XMM-Newton (decaying DM ALPs) [121]

Cosmology

- Ionisation fraction, EBL, X-rays [122]
- BBN+$N_{\rm eff}$ [123]
- Freeze in [124]

2 Heavy ALP-photon coupling

- ATALS (PbPb) [125]
- BaBar [126]
- Beam dump [127, 128, 126, 129, 130]
- Belle II [131]
- BESIII [132]
- CMS (PbPb) [133]
- LEP [134]
- LHC (pp)[135]
- NOMAD [136]
- OPAL [135]
- PrimEx [137, 138]
- CONUS (projection) [139]
- DUNE (projection) [140]
- FASER LLP (projection) [141]

3 Axion-electron

- EDELWEISS [142]
- Magnon non-demolition [143]
- GERDA [144]
- LUX [145]
- Panda-X [146]
- SuperCDMS [147]
- XENON1T [148, 149]
- XENONnT [150]
- XENON1T (Solar basin) [151]
- Red giants (ωCen) [152]
- NV Centers (projection) [153]
- Solar neutrinos [154]
- Magnons (projection) [155]
- Polaritons (projection) [156]
- DARWIN (projection) [157]
- LZ (projection) [158]
- QUAX [159, 160]
- Semiconductors (projection) [161]
- White dwarf hint [162]
- Freeze-in irreducible axions [124]
- X-rays (1-loop decay) [163]

4 Axion-nucleon

Note: CASPEr and nEDM limits account for stochastic correction reported in [164]

- Casimir effect (fifth force) [165]
- CASPEr-ZULF-Comagnetometer [166]
- CASPEr-ZULF-Sidechain [167]
- nEDM (ultracold neutrons and mercury) [168]
- NASDUCK [169, 170]
- PSI HgM (nEDM) [171]
- K-3He comagnetometer (fifth force) [172]
- K-3He comagnetometer (dark matter) [173]
- JEDI [174]
- Old comagnetometers [175]
- Torsion balance [176]
- Neutron star cooling [177] (corrected from [178])
- SN1987A Cooling [179]
- SNO (deuterium dissasociation) [180]
- Proton storage ring (projection) [181]
- DM comagnetometer (projection) [175]
- CASPEr-gradient (projection) [167]
- Superfluid helium-3 HPD (projection) [182]

5 Axion-EDM

- Beam EDM [183]
- BBN (dark matter) [184]
- CASPEr-electric [185]
- nEDM [168]
- HfF^+ [186]
- JEDI [174]
- Rb/Quartz [187]
- SN1987A [188]
- *Planck*+BAO thermal axion bound [189]
- CASPEr-electric (projection) [190]
- Storage Ring EDM (projection) [190]

6 Axion mass versus f_a

- BBN (dark matter) [184]
- Beam EDM [183]
- Binary pulsars and Solar core constraint on $\bar{\theta}$ [191]. I include minor numerical corrections made by [192, 193].
- GW170817 [194]
- HfF^+ [186]
- Rb/Quartz [187]
- JEDI [174]
- nEDM [168]
- Piezoaxionic effect (projection) [195]
- *Planck*+BAO thermal axion bound [189]
- SN1987A [188]
- Neutron stars (projection) [191].
- NS-NS and NS-BH Inspirals (projection) [191].
- White dwarfs [196]

6.1 Black hole superradiance

- Baryakhtar et al. [197] (just Stellar mass BHs)
- Mehta et al. [197] (Stellar mass and SMBHs)
- Stott [198]
- Ünal et al. [199] (Quasars)
- Cardoso et al. [200] (dark photon)

7 Axion theory predictions

7.1 Post-inflation QCD axion

- Ballesteros et al. [201]
- Buschmann et al. 2020 [202]
- Buschmann et al. 2021 [203]
- Bonati et al. [204]
- Borsanyi et al. [205]
- Berkowitz et al. [206]
- Dine et al. [207]
- Petreczky et al. [208]
- Fleury & Moore [209]
- Klaer & Moore [210]

7.2 Other dark matter predictions

- ALP Cogenesis [211]
- Early matter domination [212]
- Post-inflation ALP misalignment [213, 214]
- Trapped misalignment ($\mathcal{Z}_\mathcal{N}$ axion) [192]

8 CP-violating couplings

Combined constraints [215]

Scalar-nucleon

- Red giants [216]
- MICROSCOPE [217].
- Eot-Wash [218, 219, 220]
- Irvine [221]. Corrected to 2σ limit by [222]
- HUST [223, 224, 225, 226].
- Stanford [227]
- IUPUI [228].
- Wuhan [222]

Pseudoscalar-electron

- Red giants [216]
- Eot-wash [229]
- NIST [230]
- SMILE [231].
- QUAX [232, 233]
- Washington [234, 235].
- XENON1T [236]
- Magnon (projection) [156]
- QUAX (projection) [232].

Pseudoscalar-nucleon

- Neutron star cooling [178]
- Washington [237]. Limit taken from [238].
- SMILE [231].
- Mainz [239]
- ARIADNE (projection) [240]
- CASPEr-wind (projection) [190]
- DM comagnetometer (projection) [175]

9 Scalars

Scalar-photon

- Globular clusters [86]
- Eot-Wash (EP) [241]
- Fifth force [242]
- MICROSCOPE [217]
- AURIGA [243]
- BACON [244]
- Cs/Cav [245]
- DAMNED [246]
- Dy/Dy [247]
- Dy/Quartz [187]
- Dynamic Decoupling [248]
- GEO600 [249]
- Holometer [250]
- H/Quartz/Sapphire [251]
- PTB (Yb+, Sr clock) [252]
- I_2 [253]
- Rb/Cs [254]
- Sr/Si [255]
- AEDGE (projection) [256]
- AION (projection) [256]
- DUAL (projection) [242]
- MAGIS (projection) [257]
- Nuclear clock (projection) [258]
- Mechanical Resonators (projection) [259]

Scalar-electron

- Red giants [216]
- Eot-Wash (EP) [241]
- Fifth force [242]
- MICROSCOPE [217]
- AURIGA [243]
- Cs/Cav [245]
- DAMNED [246]
- GEO600 [249]
- Holometer [250]
- H/Quartz/Sapphire [251]
- I_2 [253]
- H/Si [255]
- Rb/Quartz [187]
- AEDGE (projection) [256]
- AION (projection) [256]
- DUAL (projection) [242]
- Optical microwave clock (projection) [242]
- Optical cavities [260]
- SrOH [261]
- Mechanical Resonators (projection) [259]
- IPTA (mock data) [262]

10 Vectors

B-L coupling

- Casimir [263, 264, 265]
- Eot-Wash (EP) [266]
- Eot-Wash (ISL) [267]
- MICROSCOPE [268]
- DM stability [269]
- Horizontal branch [216]
- Sun [216]
- Eot-Wash (DM) [270]
- LIGO (O1) [271]
- LIGO/VIRGO [271]
- Asteroids (projection) [272]
- LISA (projection) [272]
- MAGIS (projection) [257]
- Optomechanical membranes (projection) [273]
- SKA (projection) [274]
- Torsion balance (projection) [274]

11 Dark photons

Combined constraints [275]

SM photon-DP transitions

- Coulomb [276, 277, 278, 279, 280],
- Plimpton & Lawton's experiment [281, 280]
- Atomic spectroscopy [282]
- Atomic force microscopy (AFM) [280]
- Static magnetic field of the Earth [283, 284, 285]
- Static magnetic field of Jupiter [286, 285].
- ALPs [54]
- SPring-8 [287]
- UWA-LSW [288, 289]
- ADMX-LSW [290]
- CROWS [57].
- DarkSRF [291]
- TEXONO [292]
- Crab nebula [293]
- COBE and FIRAS [294]

Production in stars

- CAST [295]
- SHIP [296]
- HINODE [297]
- HB and RG stars [298]
- Neutron stars [299]
- Solar neutrinos [300]
- XENON1T [301]

Dark matter cosmology/astro

- Arias et al. [213]
- Witte et al. [302, 303]
- Caputo et al. [304, 294],
- IGM [305],
- Leo T dwarf [306]
- Gas clouds [307]

Dark matter experiments

- Reinterpreted axion limits [275]
- BREAD (projection) [40]
- DAMIC [308]
- Dark E-field Radio [309]
- DM Pathfinder [310]
- DOSUE-RR [311]
- FAST Radio antenna [312]
- FUNK [313]
- LAMPOST [314]
- LOFAR (solar corona) [315]
- MuDHI [316]
- ORGAN [317]
- ORPHEUS [318]
- QUALIPHIDE [319]
- Quantum cyclotron [320]
- SENSEI [321]
- SHUKET [322]
- SuperCDMS [323]
- SuperMAG [324, 325]
- SQuAD [326],
- SQMS [327],
- Tokyo dish antennae experiments [328, 329, 330]
- WISPDMX [331]
- XENON(100,1T,nT) [161, 236, 332, 333, 301, 334].

References

[1] J. L. Ouellet et al., *First Results from ABRACADABRA-10 cm: A Search for Sub-μeV Axion Dark Matter*, Phys. Rev. Lett. **122** (2019) 121802 [1810.12257].

[2] C. P. Salemi et al., *Search for Low-Mass Axion Dark Matter with ABRACADABRA-10 cm*, Phys. Rev. Lett. **127** (2021) 081801 [2102.06722].

[3] S. J. Asztalos, G. Carosi, C. Hagmann, D. Kinion, K. van Bibber, M. Hotz, L. J. Rosenberg, G. Rybka, J. Hoskins, J. Hwang, P. Sikivie, D. B. Tanner, R. Bradley, J. Clarke and ADMX Collaboration, *SQUID-Based Microwave Cavity Search for Dark-Matter Axions*, Phys. Rev. Lett. **104** (2010) 041301 [0910.5914].

[4] ADMX Collaboration, N. Du et al., *A Search for Invisible Axion Dark Matter with the Axion Dark Matter Experiment*, Phys. Rev. Lett. **120** (2018) 151301 [1804.05750].

[5] ADMX Collaboration, T. Braine et al., *Extended Search for the Invisible Axion with the Axion Dark Matter Experiment*, Phys. Rev. Lett. **124** (2020) 101303 [1910.08638].

[6] ADMX Collaboration, C. Bartram et al., *Search for Invisible Axion Dark Matter in the 3.3–4.2 μeV Mass Range*, Phys. Rev. Lett. **127** (2021) 261803 [2110.06096].

[7] ADMX Collaboration, C. Boutan et al., *Piezoelectrically Tuned Multimode Cavity Search for Axion Dark Matter*, Phys. Rev. Lett. **121** (2018) 261302 [1901.00920].

[8] C. Bartram et al., *Dark Matter Axion Search Using a Josephson Traveling Wave Parametric Amplifier*, 2110.10262.

[9] N. Crisosto, P. Sikivie, N. S. Sullivan, D. B. Tanner, J. Yang and G. Rybka, *ADMX SLIC: Results from a Superconducting LC Circuit Investigating Cold Axions*, Phys. Rev. Lett. **124** (2020) 241101 [1911.05772].

[10] S. Lee, S. Ahn, J. Choi, B. R. Ko and Y. K. Semertzidis, *Axion Dark Matter Search around 6.7 μeV*, Phys. Rev. Lett. **124** (2020) 101802 [2001.05102].

[11] J. Jeong, S. Youn, S. Bae, J. Kim, T. Seong, J. E. Kim and Y. K. Semertzidis, *Search for Invisible Axion Dark Matter with a Multiple-Cell Haloscope*, Phys. Rev. Lett. **125** (2020) 221302 [2008.10141].

[12] CAPP Collaboration, O. Kwon et al., *First Results from an Axion Haloscope at CAPP around 10.7 μeV*, Phys. Rev. Lett. **126** (2021) 191802 [2012.10764].

[13] Y. Lee, B. Yang, H. Yoon, M. Ahn, H. Park, B. Min, D. Kim and J. Yoo, *Searching for Invisible Axion Dark Matter with an 18 T Magnet Haloscope*, Phys. Rev. Lett. **128** (2022) 241805 [2206.08845].

[14] J. Kim et al., *Near-Quantum-Noise Axion Dark Matter Search at CAPP around 9.5 μeV*, 2207.13597.

[15] A. K. Yi et al., *DFSZ Axion Dark Matter Search around 4.55 μeV*, 2210.10961.

[16] C. M. Adair et al., *Search for Dark Matter Axions with CAST-CAPP*, Nature Commun. **13** (2022) 6180 [2211.02902].

[17] J. A. Devlin et al., *Constraints on the Coupling between Axionlike Dark Matter and Photons Using an Antiproton Superconducting Tuned Detection Circuit in a Cryogenic Penning Trap*, Phys. Rev. Lett. **126** (2021) 041301 [2101.11290].

[18] T. Grenet, R. Ballou, Q. Basto, K. Martineau, P. Perrier, P. Pugnat, J. Quevillon, N. Roch and C. Smith, *The Grenoble Axion Haloscope platform (GrAHal): development plan and first results*, 2110.14406.

[19] HAYSTAC Collaboration, L. Zhong et al., *Results from phase 1 of the HAYSTAC microwave cavity axion experiment*, Phys. Rev. D **97** (2018) 092001 [1803.03690].

[20] HAYSTAC Collaboration, K. M. Backes et al., *A quantum-enhanced search for dark matter axions*, Nature **590** (2021) 238 [2008.01853].

[21] M. J. Jewell et al., *New Results from HAYSTAC's Phase II Operation with a Squeezed State Receiver*, 2301.09721.

[22] B. T. McAllister, G. Flower, E. N. Ivanov, M. Goryachev, J. Bourhill and M. E. Tobar, *The ORGAN Experiment: An axion haloscope above 15 GHz*, Phys. Dark Univ. **18** (2017) 67 [1706.00209].

[23] A. P. Quiskamp, B. T. McAllister, P. Altin, E. N. Ivanov, M. Goryachev and M. E. Tobar, *Direct search for dark matter axions excluding ALP cogenesis in the 63- to 67-μeV range with the ORGAN experiment*, Sci. Adv. **8** (2022) abq3765 [2203.12152].

[24] D. Alesini et al., *Galactic axions search with a superconducting resonant cavity*, Phys. Rev. D **99** (2019) 101101 [1903.06547].

[25] D. Alesini et al., *Search for invisible axion dark matter of mass $m_a = 43$ μeV with the QUAX–aγ experiment*, Phys. Rev. D **103** (2021) 102004 [2012.09498].

[26] D. Alesini et al., *Search for Galactic axions with a high-Q dielectric cavity*, Phys. Rev. D **106** (2022) 052007 [2208.12670].

[27] CAST Collaboration, A. A. Melcón et al., *First results of the CAST-RADES haloscope search for axions at 34.67 μeV*, JHEP **21** (2020) 075 [2104.13798].

[28] S. DePanfilis, A. C. Melissinos, B. E. Moskowitz, J. T. Rogers, Y. K. Semertzidis, W. U. Wuensch, H. J. Halama, A. G. Prodell, W. B. Fowler and F. A. Nezrick, *Limits on the abundance and coupling of cosmic axions at 4.5< m_a <5.0 μev*, Phys. Rev. Lett. **59** (1987) 839.

[29] A. V. Gramolin, D. Aybas, D. Johnson, J. Adam and A. O. Sushkov, *Search for axion-like dark matter with ferromagnets*, Nature Phys. **17** (2021) 79 [2003.03348].

[30] TASEH Collaboration, H. Chang et al., *First Results from the Taiwan Axion Search Experiment with a Haloscope at 19.6 μeV*, *Phys. Rev. Lett.* **129** (2022) 111802 [2205.05574].

[31] C. Hagmann, P. Sikivie, N. S. Sullivan and D. B. Tanner, *Results from a search for cosmic axions*, *Phys. Rev. D* **42** (1990) 1297.

[32] C. A. Thomson, B. T. McAllister, M. Goryachev, E. N. Ivanov and M. E. Tobar, *Upconversion Loop Oscillator Axion Detection Experiment: A Precision Frequency Interferometric Axion Dark Matter Search with a Cylindrical Microwave Cavity*, *Phys. Rev. Lett.* **126** (2021) 081803 [1912.07751]. [Erratum: Phys.Rev.Lett. 127, 019901 (2021)].

[33] *ABRACADABRA*, https://abracadabra.mit.edu/.

[34] H. Liu, B. D. Elwood, M. Evans and J. Thaler, *Searching for Axion Dark Matter with Birefringent Cavities*, *Phys. Rev. D* **100** (2019) 023548 [1809.01656].

[35] I. Stern, *ADMX Status*, *PoS* **ICHEP2016** (2016) 198 [1612.08296].

[36] K. Nagano, T. Fujita, Y. Michimura and I. Obata, *Axion Dark Matter Search with Interferometric Gravitational Wave Detectors*, *Phys. Rev. Lett.* **123** (2019) 111301 [1903.02017].

[37] M. Lawson, A. J. Millar, M. Pancaldi, E. Vitagliano and F. Wilczek, *Tunable axion plasma haloscopes*, *Phys. Rev. Lett.* **123** (2019) 141802 [1904.11872].

[38] A. J. Millar et al., *ALPHA: Searching For Dark Matter with Plasma Haloscopes*, 2210.00017.

[39] *BRASS*, https://www1.physik.uni-hamburg.de/iexp/gruppe-horns/forschung/brass.html.

[40] BREAD Collaboration, J. Liu et al., *Broadband Solenoidal Haloscope for Terahertz Axion Detection*, *Phys. Rev. Lett.* **128** (2022) 131801 [2111.12103].

[41] B. Aja et al., *The Canfranc Axion Detection Experiment (CADEx): search for axions at 90 GHz with Kinetic Inductance Detectors*, *JCAP* **11** (2022) 044 [2206.02980].

[42] *DMRadio*, https://indico.mit.edu/event/151/contributions/295/attachments/96/172/Dark%20Matter%20Radio_CambridgeAxions2021.pdf.

[43] DMRadio Collaboration, L. Brouwer et al., *Projected sensitivity of DMRadio-m3: A search for the QCD axion below 1 μeV*, *Phys. Rev. D* **106** (2022) 103008 [2204.13781].

[44] Y. Michimura, Y. Oshima, T. Watanabe, T. Kawasaki, H. Takeda, M. Ando, K. Nagano, I. Obata and T. Fujita, *DANCE: Dark matter Axion search with riNg Cavity Experiment*, *J. Phys. Conf. Ser.* **1468** (2020) 012032 [1911.05196].

[45] M. Baryakhtar, J. Huang and R. Lasenby, *Axion and hidden photon dark matter detection with multilayer optical haloscopes*, *Phys. Rev. D* **98** (2018) 035006 [1803.11455].

[46] S. Beurthey et al., *MADMAX Status Report*, 2003.10894.

[47] D. Alesini, D. Babusci, D. Di Gioacchino, C. Gatti, G. Lamanna and C. Ligi, *The KLASH Proposal*, 1707.06010.

[48] C. Gatti, *From KLASH to FLASH: A Proposal for a 100-300 MHz Haloscope*, https://indico.cern.ch/event/1115163/contributions/4685952/attachments/2393240/4091553/FLASH-100MHZHaloscopeWorkshop.pdf.

[49] A. Rettaroli, *Probing the axion-photon interaction with QUAX experiment: status and perspectives*, https://agenda.infn.it/event/20431/contributions/137687/attachments/82511/108428/Rettaroli_Patras2021_compressed.pdf.

[50] J. Schütte-Engel, D. J. E. Marsh, A. J. Millar, A. Sekine, F. Chadha-Day, S. Hoof, M. N. Ali, K.-C. Fong, E. Hardy and L. Šmejkal, *Axion quasiparticles for axion dark matter detection*, *JCAP* **08** (2021) 066 [2102.05366].

[51] J. F. Bourhill, E. C. I. Paterson, M. Goryachev and M. E. Tobar, *Twisted Anyon Cavity Resonators with Bulk Modes of Chiral Symmetry and Sensitivity to Ultra-Light Axion Dark Matter*, 2208.01640.

[52] Z. Zhang, D. Horns and O. Ghosh, *Search for dark matter with an LC circuit*, *Phys. Rev. D* **106** (2022) 023003 [2111.04541].

[53] A. Berlin, R. T. D'Agnolo, S. A. R. Ellis and K. Zhou, *Heterodyne broadband detection of axion dark matter*, *Phys. Rev. D* **104** (2021) L111701 [2007.15656].

[54] K. Ehret et al., *New ALPS Results on Hidden-Sector Lightweights*, *Phys. Lett. B* **689** (2010) 149 [1004.1313].

[55] CAST Collaboration, S. Andriamonje et al., *An Improved limit on the axion-photon coupling from the CAST experiment*, *JCAP* **04** (2007) 010 [hep-ex/0702006].

[56] CAST Collaboration, V. Anastassopoulos et al., *New CAST Limit on the Axion-Photon Interaction*, *Nature Phys.* **13** (2017) 584 [1705.02290].

[57] M. Betz, F. Caspers, M. Gasior, M. Thumm and S. W. Rieger, *First results of the CERN Resonant Weakly Interacting sub-eV Particle Search (CROWS)*, *Phys. Rev. D* **88** (2013) 075014 [1310.8098].

[58] OSQAR Collaboration, R. Ballou et al., *New exclusion limits on scalar and pseudoscalar axionlike particles from light shining through a wall*, *Phys. Rev. D* **92** (2015) 092002 [1506.08082].

[59] F. Della Valle, A. Ejlli, U. Gastaldi, G. Messineo, E. Milotti, R. Pengo, G. Ruoso and G. Zavattini, *The PVLAS experiment: measuring vacuum magnetic birefringence and dichroism with a birefringent Fabry–Perot cavity*, *Eur. Phys. J. C* **76** (2016) 24 [1510.08052].

[60] SAPPHIRES Collaboration, K. Homma et al., *Search for sub-eV axion-like resonance states via stimulated quasi-parallel laser collisions with the parameterization including fully asymmetric collisional geometry*, JHEP **12** (2021) 108 [2105.01224].

[61] SAPPHIRES Collaboration, Y. Kirita et al., *Search for sub-eV axion-like particles in a stimulated resonant photon-photon collider with two laser beams based on a novel method to discriminate pressure-independent components*, JHEP **10** (2022) 176 [2208.09880].

[62] M. D. Ortiz et al., *Design of the ALPS II optical system*, Phys. Dark Univ. **35** (2022) 100968 [2009.14294].

[63] IAXO Collaboration, E. Armengaud et al., *Physics potential of the International Axion Observatory (IAXO)*, JCAP **06** (2019) 047 [1904.09155].

[64] S.-F. Ge, K. Hamaguchi, K. Ichimura, K. Ishidoshiro, Y. Kanazawa, Y. Kishimoto, N. Nagata and J. Zheng, *Supernova-scope for the Direct Search of Supernova Axions*, JCAP **11** (2020) 059 [2008.03924].

[65] M. Escudero, C. K. Pooni, M. Fairbairn, D. Blas, X. Du and D. J. E. Marsh, *Axion Star Explosions: A New Source for Axion Indirect Detection*, 2302.10206.

[66] M. Xiao, K. M. Perez, M. Giannotti, O. Straniero, A. Mirizzi, B. W. Grefenstette, B. M. Roach and M. Nynka, *Constraints on Axionlike Particles from a Hard X-Ray Observation of Betelgeuse*, Phys. Rev. Lett. **126** (2021) 031101 [2009.09059].

[67] BICEP/Keck Collaboration, P. A. R. Ade et al., *BICEP/Keck XIV: Improved constraints on axionlike polarization oscillations in the cosmic microwave background*, Phys. Rev. D **105** (2022) 022006 [2108.03316].

[68] A. Keller, S. O'Brien, A. Kamdar, N. M. Rapidis, A. F. Leder and K. van Bibber, *A Model-independent Radio Telescope Dark Matter Search*, Astrophys. J. **927** (2022) 71 [2112.03439].

[69] J. W. Foster, S. J. Witte, M. Lawson, T. Linden, V. Gajjar, C. Weniger and B. R. Safdi, *Extraterrestrial Axion Search with the Breakthrough Listen Galactic Center Survey*, Phys. Rev. Lett. **129** (2022) 251102 [2202.08274].

[70] M. H. Chan, *Constraining the axion-photon coupling using radio data of the Bullet Cluster*, *Sci. Rep.* **11** (2021) 20087 [2109.11734].

[71] K. Kohri and H. Kodama, *Axion-Like Particles and Recent Observations of the Cosmic Infrared Background Radiation*, Phys. Rev. D **96** (2017) 051701 [1704.05189].

[72] D. Wouters and P. Brun, *Constraints on Axion-like Particles from X-Ray Observations of the Hydra Galaxy Cluster*, Astrophys. J. **772** (2013) 44 [1304.0989].

[73] M. C. D. Marsh, H. R. Russell, A. C. Fabian, B. P. McNamara, P. Nulsen and C. S. Reynolds, *A New Bound on Axion-Like Particles*, JCAP **12** (2017) 036 [1703.07354].

[74] C. S. Reynolds, M. C. D. Marsh, H. R. Russell, A. C. Fabian, R. Smith, F. Tombesi and S. Veilleux, *Astrophysical Limits on Very Light Axion-like Particles from Chandra Grating Spectroscopy of NGC 1275*, Astrophys. J. **890** (2020) 59 [1907.05475].

[75] J. S. Reynés, J. H. Matthews, C. S. Reynolds, H. R. Russell, R. N. Smith and M. C. D. Marsh, *New constraints on light axion-like particles using Chandra transmission grating spectroscopy of the powerful cluster-hosted quasar H1821+643*, Mon. Not. Roy. Astron. Soc. **510** (2021) 1264 [2109.03261].

[76] B. Bolliet, J. Chluba and R. Battye, *Spectral distortion constraints on photon injection from low-mass decaying particles*, Mon. Not. Roy. Astron. Soc. **507** (2021) 3148 [2012.07292].

[77] A. Caputo, H.-T. Janka, G. Raffelt and E. Vitagliano, *Low-Energy Supernovae Severely Constrain Radiative Particle Decays*, Phys. Rev. Lett. **128** (2022) 221103 [2201.09890].

[78] F. Calore, P. Carenza, C. Eckner, T. Fischer, M. Giannotti, J. Jaeckel, K. Kotake, T. Kuroda, A. Mirizzi and F. Sivo, *3D template-based Fermi-LAT constraints on the diffuse supernova axion-like particle background*, Phys. Rev. D **105** (2022) 063028 [2110.03679].

[79] F. Calore, P. Carenza, M. Giannotti, J. Jaeckel and A. Mirizzi, *Bounds on axionlike particles from the diffuse supernova flux*, Phys. Rev. D **102** (2020) 123005 [2008.11741].

[80] M. A. Buen-Abad, J. Fan and C. Sun, *Constraints on Axions from Cosmic Distance Measurements*, 2011.05993.

[81] Fermi-LAT Collaboration, M. Ajello et al., *Search for Spectral Irregularities due to Photon–Axionlike-Particle Oscillations with the Fermi Large Area Telescope*, Phys. Rev. Lett. **116** (2016) 161101 [1603.06978].

[82] M. Meyer and T. Petrushevska, *Search for Axionlike-Particle-Induced Prompt γ-Ray Emission from Extragalactic Core-Collapse Supernovae with the Fermi Large Area Telescope*, Phys. Rev. Lett. **124** (2020) 231101 [2006.06722]. [Erratum: Phys.Rev.Lett. 125, 119901 (2020)].

[83] J. Davies, M. Meyer and G. Cotter, *Constraints on axionlike particles from a combined analysis of three flaring Fermi flat-spectrum radio quasars*, 2211.03414.

[84] J. L. Bernal, A. Caputo, G. Sato-Polito, J. Mirocha and M. Kamionkowski, *Seeking dark matter with γ-ray attenuation*, 2208.13794.

[85] A. Ayala, I. Domínguez, M. Giannotti, A. Mirizzi and O. Straniero, *Revisiting the bound on axion-photon coupling from Globular Clusters*, Phys. Rev. Lett. **113** (2014) 191302 [1406.6053].

[86] M. J. Dolan, F. J. Hiskens and R. R. Volkas, *Advancing globular cluster constraints on the axion-photon coupling*, JCAP **10** (2022) 096 [2207.03102].

[87] S. Jacobsen, T. Linden and K. Freese, *Constraining Axion-Like Particles with HAWC Observations of TeV Blazars*, 2203.04332.

[88] H.E.S.S. Collaboration, A. Abramowski et al., *Constraints on axionlike particles with H.E.S.S. from the irregularity of the PKS 2155-304 energy spectrum*, *Phys. Rev. D* **88** (2013) 102003 [1311.3148].

[89] F. Calore, A. Dekker, P. D. Serpico and T. Siegert, *Constraints on light decaying dark matter candidates from 16 years of INTEGRAL/SPI observations*, 2209.06299.

[90] D. Wadekar and Z. Wang, *Strong constraints on decay and annihilation of dark matter from heating of gas-rich dwarf galaxies*, *Phys. Rev. D* **106** (2022) 075007 [2111.08025].

[91] C. Dessert, A. J. Long and B. R. Safdi, *No Evidence for Axions from Chandra Observation of the Magnetic White Dwarf RE J0317-853*, *Phys. Rev. Lett.* **128** (2022) 071102 [2104.12772].

[92] C. Dessert, D. Dunsky and B. R. Safdi, *Upper limit on the axion-photon coupling from magnetic white dwarf polarization*, *Phys. Rev. D* **105** (2022) 103034 [2203.04319].

[93] M. M. Ivanov, Y. Y. Kovalev, M. L. Lister, A. G. Panin, A. B. Pushkarev, T. Savolainen and S. V. Troitsky, *Constraining the photon coupling of ultra-light dark-matter axion-like particles by polarization variations of parsec-scale jets in active galaxies*, *JCAP* **02** (2019) 059 [1811.10997].

[94] H.-J. Li, J.-G. Guo, X.-J. Bi, S.-J. Lin and P.-F. Yin, *Limits on axionlike particles from Mrk 421 with 4.5-year period observations by ARGO-YBJ and Fermi-LAT*, *Phys. Rev. D* **103** (2021) 083003 [2008.09464].

[95] H.-J. Li, X.-J. Bi and P.-F. Yin, *Searching for axion-like particles with the blazar observations of MAGIC and Fermi-LAT **, *Chin. Phys. C* **46** (2022) 085105 [2110.13636].

[96] J. W. Foster, Y. Kahn, O. Macias, Z. Sun, R. P. Eatough, V. I. Kondratiev, W. M. Peters, C. Weniger and B. R. Safdi, *Green Bank and Effelsberg Radio Telescope Searches for Axion Dark Matter Conversion in Neutron Star Magnetospheres*, *Phys. Rev. Lett.* **125** (2020) 171301 [2004.00011].

[97] J. Darling, *New Limits on Axionic Dark Matter from the Magnetar PSR J1745-2900*, *Astrophys. J. Lett.* **900** (2020) L28 [2008.11188].

[98] R. A. Battye, J. Darling, J. I. McDonald and S. Srinivasan, *Towards robust constraints on axion dark matter using PSR J1745-2900*, *Phys. Rev. D* **105** (2022) L021305 [2107.01225].

[99] M. A. Fedderke, P. W. Graham and S. Rajendran, *Axion Dark Matter Detection with CMB Polarization*, *Phys. Rev. D* **100** (2019) 015040 [1903.02666].

[100] A. Castillo, J. Martin-Camalich, J. Terol-Calvo, D. Blas, A. Caputo, R. T. G. Santos, L. Sberna, M. Peel and J. A. Rubiño Martín, *Searching for dark-matter waves with PPTA and QUIJOTE pulsar polarimetry*, *JCAP* **06** (2022) 014 [2201.03422].

[101] T. Liu, X. Lou and J. Ren, *Pulsar Polarization Arrays*, 2111.10615.

[102] D. Noordhuis, A. Prabhu, S. J. Witte, A. Y. Chen, F. Cruz and C. Weniger, *Novel Constraints on Axions Produced in Pulsar Polar Cap Cascades*, 2209.09917.

[103] C. Severino and I. Lopes, *Asteroseismology: Looking for axions in the red supergiant star Alpha Ori*, 2212.01890.

[104] N. Vinyoles, A. Serenelli, F. L. Villante, S. Basu, J. Redondo and J. Isern, *New axion and hidden photon constraints from a solar data global fit*, *JCAP* **2015** (2015) 015 [1501.01639].

[105] J. Jaeckel, P. C. Malta and J. Redondo, *Decay photons from the axionlike particles burst of type II supernovae*, *Phys. Rev. D* **98** (2018) 055032 [1702.02964].

[106] S. Hoof and L. Schulz, *Updated constraints on axion-like particles from temporal information in supernova SN1987A gamma-ray data*, 2212.09764.

[107] A. Payez, C. Evoli, T. Fischer, M. Giannotti, A. Mirizzi and A. Ringwald, *Revisiting the SN1987A gamma-ray limit on ultralight axion-like particles*, *JCAP* **02** (2015) 006 [1410.3747].

[108] A. Caputo, G. Raffelt and E. Vitagliano, *Muonic boson limits: Supernova redux*, *Phys. Rev. D* **105** (2022) 035022 [2109.03244].

[109] W. DeRocco, S. Wegsman, B. Grefenstette, J. Huang and K. Van Tilburg, *First Indirect Detection Constraints on Axions in the Solar Basin*, *Phys. Rev. Lett.* **129** (2022) 101101 [2205.05700].

[110] C. Dessert, J. W. Foster and B. R. Safdi, *X-ray Searches for Axions from Super Star Clusters*, *Phys. Rev. Lett.* **125** (2020) 261102 [2008.03305].

[111] SPT-3G Collaboration, K. R. Ferguson et al., *Searching for axionlike time-dependent cosmic birefringence with data from SPT-3G*, *Phys. Rev. D* **106** (2022) 042011 [2203.16567].

[112] B. D. Blout, E. J. Daw, M. P. Decowski, P. T. P. Ho, L. J. Rosenberg and D. B. Yu, *A Radio telescope search for axions*, *Astrophys. J.* **546** (2001) 825 [astro-ph/0006310].

[113] M. Regis, M. Taoso, D. Vaz, J. Brinchmann, S. L. Zoutendijk, N. F. Bouché and M. Steinmetz, *Searching for light in the darkness: Bounds on ALP dark matter with the optical MUSE-faint survey*, *Phys. Lett. B* **814** (2021) 136075 [2009.01310].

[114] D. Grin, G. Covone, J.-P. Kneib, M. Kamionkowski, A. Blain and E. Jullo, *A Telescope Search for Decaying Relic Axions*, *Phys. Rev. D* **75** (2007) 105018 [astro-ph/0611502].

[115] K. Nakayama and W. Yin, *Anisotropic cosmic optical background bound for decaying dark matter in light of the LORRI anomaly*, *Phys. Rev. D* **106** (2022) 103505 [2205.01079].

[116] P. Carenza, G. Lucente and E. Vitagliano, *Probing the Blue Axion with Cosmic Optical Background Anisotropies*, 2301.06560.

[117] M. Meyer, M. Giannotti, A. Mirizzi, J. Conrad and M. A. Sánchez-Conde, *Fermi Large Area Telescope as a Galactic Supernovae Axionscope*, *Phys. Rev. Lett.* **118** (2017) 011103 [1609.02350].

[118] C. Thorpe-Morgan, D. Malyshev, A. Santangelo, J. Jochum, B. Jäger, M. Sasaki and S. Saeedi, *THESEUS insights into axionlike particles, dark photon, and sterile neutrino dark matter*, *Phys. Rev. D* **102** (2020) 123003 [2008.08306].

[119] A. Dekker, E. Peerbooms, F. Zimmer, K. C. Y. Ng and S. Ando, *Searches for sterile neutrinos and axionlike particles from the Galactic halo with eROSITA*, *Phys. Rev. D* **104** (2021) 023021 [2103.13241].

[120] M. J. Dolan, F. J. Hiskens and R. R. Volkas, *Constraining axion-like particles using the white dwarf initial-final mass relation*, *JCAP* **09** (2021) 010 [2102.00379].

[121] J. W. Foster, M. Kongsore, C. Dessert, Y. Park, N. L. Rodd, K. Cranmer and B. R. Safdi, *Deep Search for Decaying Dark Matter with XMM-Newton Blank-Sky Observations*, *Phys. Rev. Lett.* **127** (2021) 051101 [2102.02207].

[122] D. Cadamuro and J. Redondo, *Cosmological bounds on pseudo Nambu-Goldstone bosons*, *JCAP* **02** (2012) 032 [1110.2895].

[123] P. F. Depta, M. Hufnagel and K. Schmidt-Hoberg, *Robust cosmological constraints on axion-like particles*, *JCAP* **05** (2020) 009 [2002.08370].

[124] K. Langhoff, N. J. Outmezguine and N. L. Rodd, *Irreducible Axion Background*, *Phys. Rev. Lett.* **129** (2022) 241101 [2209.06216].

[125] ATLAS Collaboration, G. Aad et al., *Measurement of light-by-light scattering and search for axion-like particles with 2.2 nb^{-1} of Pb+Pb data with the ATLAS detector*, *JHEP* **03** (2021) 243 [2008.05355]. [Erratum: JHEP 11, 050 (2021)].

[126] M. J. Dolan, T. Ferber, C. Hearty, F. Kahlhoefer and K. Schmidt-Hoberg, *Revised constraints and Belle II sensitivity for visible and invisible axion-like particles*, *JHEP* **12** (2017) 094 [1709.00009]. [Erratum: JHEP 03, 190 (2021)].

[127] CHARM Collaboration, F. Bergsma et al., *Search for Axion Like Particle Production in 400-GeV Proton - Copper Interactions*, *Phys. Lett. B* **157** (1985) 458.

[128] E. M. Riordan et al., *A Search for Short Lived Axions in an Electron Beam Dump Experiment*, *Phys. Rev. Lett.* **59** (1987) 755.

[129] J. Blumlein et al., *Limits on neutral light scalar and pseudoscalar particles in a proton beam dump experiment*, *Z. Phys. C* **51** (1991) 341.

[130] NA64 Collaboration, D. Banerjee et al., *Search for Axionlike and Scalar Particles with the NA64 Experiment*, *Phys. Rev. Lett.* **125** (2020) 081801 [2005.02710].

[131] Belle-II Collaboration, F. Abudinén et al., *Search for Axion-Like Particles produced in e^+e^- collisions at Belle II*, *Phys. Rev. Lett.* **125** (2020) 161806 [2007.13071].

[132] BESIII Collaboration, M. Ablikim et al., *Search for an axion-like particle in J/ψ radiative decays*, 2211.12699.

[133] CMS Collaboration, A. M. Sirunyan et al., *Evidence for light-by-light scattering and searches for axion-like particles in ultraperipheral PbPb collisions at $\sqrt{s_{\rm NN}} = 5.02$ TeV*, *Phys. Lett. B* **797** (2019) 134826 [1810.04602].

[134] J. Jaeckel and M. Spannowsky, *Probing MeV to 90 GeV axion-like particles with LEP and LHC*, *Phys. Lett. B* **753** (2016) 482 [1509.00476].

[135] S. Knapen, T. Lin, H. K. Lou and T. Melia, *Searching for Axionlike Particles with Ultraperipheral Heavy-Ion Collisions*, *Phys. Rev. Lett.* **118** (2017) 171801 [1607.06083].

[136] NOMAD Collaboration, P. Astier et al., *Search for eV (pseudo)scalar penetrating particles in the SPS neutrino beam*, *Phys. Lett. B* **479** (2000) 371.

[137] PrimEx Collaboration, I. Larin et al., *A New Measurement of the π^0 Radiative Decay Width*, *Phys. Rev. Lett.* **106** (2011) 162303 [1009.1681].

[138] D. Aloni, C. Fanelli, Y. Soreq and M. Williams, *Photoproduction of Axionlike Particles*, *Phys. Rev. Lett.* **123** (2019) 071801 [1903.03586].

[139] J. B. Dent, B. Dutta, D. Kim, S. Liao, R. Mahapatra, K. Sinha and A. Thompson, *New Directions for Axion Searches via Scattering at Reactor Neutrino Experiments*, *Phys. Rev. Lett.* **124** (2020) 211804 [1912.05733].

[140] V. Brdar, B. Dutta, W. Jang, D. Kim, I. M. Shoemaker, Z. Tabrizi, A. Thompson and J. Yu, *Axionlike Particles at Future Neutrino Experiments: Closing the Cosmological Triangle*, *Phys. Rev. Lett.* **126** (2021) 201801 [2011.07054].

[141] FASER Collaboration, A. Ariga et al., *FASER's physics reach for long-lived particles*, *Phys. Rev. D* **99** (2019) 095011 [1811.12522].

[142] EDELWEISS Collaboration, E. Armengaud et al., *Searches for electron interactions induced by new physics in the EDELWEISS-III Germanium bolometers*, *Phys. Rev. D* **98** (2018) 082004 [1808.02340].

[143] T. Ikeda, A. Ito, K. Miuchi, J. Soda, H. Kurashige and Y. Shikano, *Axion search with quantum nondemolition detection of magnons*, *Phys. Rev. D* **105** (2022) 102004 [2102.08764].

[144] GERDA Collaboration, M. Agostini et al., *First Search for Bosonic Superweakly Interacting Massive Particles with Masses up to 1 MeV/c^2 with GERDA*, *Phys. Rev. Lett.* **125** (2020) 011801 [2005.14184].

[145] LUX Collaboration, D. S. Akerib et al., *First Searches for Axions and Axionlike Particles with the LUX Experiment*, *Phys. Rev. Lett.* **118** (2017) 261301 [1704.02297].

[146] PandaX Collaboration, C. Fu et al., *Limits on Axion Couplings from the First 80 Days of Data of the PandaX-II Experiment*, *Phys. Rev. Lett.* **119** (2017) 181806 [1707.07921].

[147] SuperCDMS Collaboration, T. Aralis et al., *Constraints on dark photons and axionlike particles from the SuperCDMS Soudan experiment*, *Phys. Rev. D* **101** (2020) 052008 [1911.11905]. [Erratum: Phys.Rev.D 103, 039901 (2021)].

[148] XENON Collaboration, E. Aprile et al., *Light Dark Matter Search with Ionization Signals in XENON1T*, *Phys. Rev. Lett.* **123** (2019) 251801 [1907.11485].

[149] XENON Collaboration, E. Aprile et al., *Excess electronic recoil events in XENON1T*, *Phys. Rev. D* **102** (2020) 072004 [2006.09721].

[150] (XENON Collaboration)††, XENON Collaboration, E. Aprile et al., *Search for New Physics in Electronic Recoil Data from XENONnT*, *Phys. Rev. Lett.* **129** (2022) 161805 [2207.11330].

[151] K. Van Tilburg, *Stellar basins of gravitationally bound particles*, *Phys. Rev. D* **104** (2021) 023019 [2006.12431].

[152] F. Capozzi and G. Raffelt, *Axion and neutrino bounds improved with new calibrations of the tip of the red-giant branch using geometric distance determinations*, *Phys. Rev. D* **102** (2020) 083007 [2007.03694].

[153] S. Chigusa, M. Hazumi, E. D. Herbschleb, N. Mizuochi and K. Nakayama, *Light Dark Matter Search with Nitrogen-Vacancy Centers in Diamonds*, 2302.12756.

[154] P. Gondolo and G. G. Raffelt, *Solar neutrino limit on axions and keV-mass bosons*, *Phys. Rev. D* **79** (2009) 107301 [0807.2926].

[155] S. Chigusa, T. Moroi and K. Nakayama, *Detecting light boson dark matter through conversion into a magnon*, *Phys. Rev. D* **101** (2020) 096013 [2001.10666].

[156] A. Mitridate, T. Trickle, Z. Zhang and K. M. Zurek, *Detectability of Axion Dark Matter with Phonon Polaritons and Magnons*, *Phys. Rev. D* **102** (2020) 095005 [2005.10256].

[157] DARWIN Collaboration, J. Aalbers et al., *DARWIN: towards the ultimate dark matter detector*, *JCAP* **11** (2016) 017 [1606.07001].

[158] LZ Collaboration, D. S. Akerib et al., *Projected sensitivities of the LUX-ZEPLIN experiment to new physics via low-energy electron recoils*, *Phys. Rev. D* **104** (2021) 092009 [2102.11740].

[159] N. Crescini et al., *Operation of a ferromagnetic axion haloscope at $m_a = 58\,\mu$eV*, *Eur. Phys. J. C* **78** (2018) 703 [1806.00310]. [Erratum: Eur.Phys.J.C 78, 813 (2018)].

[160] QUAX Collaboration, N. Crescini et al., *Axion search with a quantum-limited ferromagnetic haloscope*, *Phys. Rev. Lett.* **124** (2020) 171801 [2001.08940].

[161] I. M. Bloch, R. Essig, K. Tobioka, T. Volansky and T.-T. Yu, *Searching for Dark Absorption with Direct Detection Experiments*, *JHEP* **06** (2017) 087 [1608.02123].

[162] M. Giannotti, I. G. Irastorza, J. Redondo, A. Ringwald and K. Saikawa, *Stellar Recipes for Axion Hunters*, *JCAP* **10** (2017) 010 [1708.02111].

[163] R. Z. Ferreira, M. C. D. Marsh and E. Müller, *Do Direct Detection Experiments Constrain Axionlike Particles Coupled to Electrons?*, *Phys. Rev. Lett.* **128** (2022) 221302 [2202.08858].

[164] G. P. Centers et al., *Stochastic fluctuations of bosonic dark matter*, *Nature Commun.* **12** (2021) 7321 [1905.13650].

[165] V. M. Mostepanenko and G. L. Klimchitskaya, *The State of the Art in Constraining Axion-to-Nucleon Coupling and Non-Newtonian Gravity from Laboratory Experiments*, *Universe* **6** (2020) 147 [2009.04517].

[166] T. Wu et al., *Search for Axionlike Dark Matter with a Liquid-State Nuclear Spin Comagnetometer*, *Phys. Rev. Lett.* **122** (2019) 191302 [1901.10843].

[167] A. Garcon et al., *Constraints on bosonic dark matter from ultralow-field nuclear magnetic resonance*, *Sci. Adv.* **5** (2019) eaax4539 [1902.04644].

[168] C. Abel et al., *Search for Axionlike Dark Matter through Nuclear Spin Precession in Electric and Magnetic Fields*, *Phys. Rev. X* **7** (2017) 041034 [1708.06367].

[169] NASDUCK Collaboration, I. M. Bloch, G. Ronen, R. Shaham, O. Katz, T. Volansky and O. Katz, *New constraints on axion-like dark matter using a Floquet quantum detector*, *Sci. Adv.* **8** (2022) abl8919 [2105.04603].

[170] NASDUCK Collaboration, I. M. Bloch, R. Shaham, Y. Hochberg, E. Kuflik, T. Volansky and O. Katz, *NASDUCK SERF: New constraints on axion-like dark matter from a SERF comagnetometer*, 2209.13588.

[171] C. Abel et al., *Search for ultralight axion dark matter in a side-band analysis of a 199Hg free-spin precession signal*, 2212.02403.

[172] G. Vasilakis, J. M. Brown, T. W. Kornack and M. V. Romalis, *Limits on New Long Range Nuclear Spin-Dependent Forces Set with a K-He3 Comagnetometer*, *Phys. Rev. Lett.* **103** (2009) 261801 [0809.4700].

[173] J. Lee, M. Lisanti, W. A. Terrano and M. Romalis, *Laboratory Constraints on the Neutron-Spin Coupling of feV-scale Axions*, 2209.03289.

[174] JEDI Collaboration, S. Karanth et al., *First Search for Axion-Like Particles in a Storage Ring Using a Polarized Deuteron Beam*, 2208.07293.

[175] I. M. Bloch, Y. Hochberg, E. Kuflik and T. Volansky, *Axion-like Relics: New Constraints from Old Comagnetometer Data*, JHEP **01** (2020) 167 [1907.03767].

[176] E. G. Adelberger, B. R. Heckel, S. A. Hoedl, C. D. Hoyle, D. J. Kapner and A. Upadhye, *Particle Physics Implications of a Recent Test of the Gravitational Inverse Sqaure Law*, Phys. Rev. Lett. **98** (2007) 131104 [hep-ph/0611223].

[177] M. Buschmann, C. Dessert, J. W. Foster, A. J. Long and B. R. Safdi, *Upper Limit on the QCD Axion Mass from Isolated Neutron Star Cooling*, Phys. Rev. Lett. **128** (2022) 091102 [2111.09892].

[178] M. V. Beznogov, E. Rrapaj, D. Page and S. Reddy, *Constraints on Axion-like Particles and Nucleon Pairing in Dense Matter from the Hot Neutron Star in HESS J1731-347*, Phys. Rev. C **98** (2018) 035802 [1806.07991].

[179] P. Carenza, T. Fischer, M. Giannotti, G. Guo, G. Martínez-Pinedo and A. Mirizzi, *Improved axion emissivity from a supernova via nucleon-nucleon bremsstrahlung*, JCAP **10** (2019) 016 [1906.11844]. [Erratum: JCAP 05, E01 (2020)].

[180] A. Bhusal, N. Houston and T. Li, *Searching for Solar Axions Using Data from the Sudbury Neutrino Observatory*, Phys. Rev. Lett. **126** (2021) 091601 [2004.02733].

[181] P. W. Graham, S. Hacıömeroğlu, D. E. Kaplan, Z. Omarov, S. Rajendran and Y. K. Semertzidis, *Storage ring probes of dark matter and dark energy*, Phys. Rev. D **103** (2021) 055010 [2005.11867].

[182] C. Gao, W. Halperin, Y. Kahn, M. Nguyen, J. Schütte-Engel and J. W. Scott, *Axion Wind Detection with the Homogeneous Precession Domain of Superfluid Helium-3*, Phys. Rev. Lett. **129** (2022) 211801 [2208.14454].

[183] I. Schulthess et al., *New Limit on Axionlike Dark Matter Using Cold Neutrons*, Phys. Rev. Lett. **129** (2022) 191801 [2204.01454].

[184] K. Blum, R. T. D'Agnolo, M. Lisanti and B. R. Safdi, *Constraining Axion Dark Matter with Big Bang Nucleosynthesis*, Phys. Lett. B **737** (2014) 30 [1401.6460].

[185] D. Aybas et al., *Search for Axionlike Dark Matter Using Solid-State Nuclear Magnetic Resonance*, Phys. Rev. Lett. **126** (2021) 141802 [2101.01241].

[186] T. S. Roussy et al., *Experimental Constraint on Axionlike Particles over Seven Orders of Magnitude in Mass*, Phys. Rev. Lett. **126** (2021) 171301 [2006.15787].

[187] X. Zhang, A. Banerjee, M. Leyser, G. Perez, S. Schiller, D. Budker and D. Antypas, *Search for ultralight dark matter with spectroscopy of radio-frequency atomic transitions*, 2212.04413.

[188] G. Lucente, L. Mastrototaro, P. Carenza, L. Di Luzio, M. Giannotti and A. Mirizzi, *Axion signatures from supernova explosions through the nucleon electric-dipole portal*, Phys. Rev. D **105** (2022) 123020 [2203.15812].

[189] L. Caloni, M. Gerbino, M. Lattanzi and L. Visinelli, *Novel cosmological bounds on thermally-produced axion-like particles*, JCAP **09** (2022) 021 [2205.01637].

[190] D. F. Jackson Kimball et al., *Overview of the Cosmic Axion Spin Precession Experiment (CASPEr)*, Springer Proc. Phys. **245** (2020) 105 [1711.08999].

[191] A. Hook and J. Huang, *Probing axions with neutron star inspirals and other stellar processes*, JHEP **06** (2018) 036 [1708.08464].

[192] L. Di Luzio, B. Gavela, P. Quilez and A. Ringwald, *Dark matter from an even lighter QCD axion: trapped misalignment*, JCAP **10** (2021) 001 [2102.01082].

[193] L. Di Luzio, B. Gavela, P. Quilez and A. Ringwald, *An even lighter QCD axion*, JHEP **05** (2021) 184 [2102.00012].

[194] J. Zhang, Z. Lyu, J. Huang, M. C. Johnson, L. Sagunski, M. Sakellariadou and H. Yang, *First Constraints on Nuclear Coupling of Axionlike Particles from the Binary Neutron Star Gravitational Wave Event GW170817*, Phys. Rev. Lett. **127** (2021) 161101 [2105.13963].

[195] A. Arvanitaki, A. Madden and K. Van Tilburg, *The Piezoaxionic Effect*, 2112.11466.

[196] R. Balkin, J. Serra, K. Springmann, S. Stelzl and A. Weiler, *White dwarfs as a probe of light QCD axions*, 2211.02661.

[197] M. Baryakhtar, M. Galanis, R. Lasenby and O. Simon, *Black hole superradiance of self-interacting scalar fields*, Phys. Rev. D **103** (2021) 095019 [2011.11646].

[198] M. J. Stott, *Ultralight Bosonic Field Mass Bounds from Astrophysical Black Hole Spin*, 2009.07206.

[199] C. Ünal, F. Pacucci and A. Loeb, *Properties of ultralight bosons from heavy quasar spins via superradiance*, JCAP **05** (2021) 007 [2012.12790].

[200] V. Cardoso, O. J. C. Dias, G. S. Hartnett, M. Middleton, P. Pani and J. E. Santos, *Constraining the mass of dark photons and axion-like particles through black-hole superradiance*, JCAP **03** (2018) 043 [1801.01420].

[201] G. Ballesteros, J. Redondo, A. Ringwald and C. Tamarit, *Unifying inflation with the axion, dark matter, baryogenesis and the seesaw mechanism*, Phys. Rev. Lett. **118** (2017) 071802 [1608.05414].

[202] M. Buschmann, J. W. Foster and B. R. Safdi, *Early-Universe Simulations of the Cosmological Axion*, Phys. Rev. Lett. **124** (2020) 161103 [1906.00967].

[203] M. Buschmann, J. W. Foster, A. Hook, A. Peterson, D. E. Willcox, W. Zhang and B. R. Safdi, *Dark matter from axion strings with adaptive mesh refinement*, Nature Commun. **13** (2022) 1049 [2108.05368].

[204] C. Bonati, M. D'Elia, M. Mariti, G. Martinelli, M. Mesiti, F. Negro, F. Sanfilippo and G. Villadoro, *Axion phenomenology and θ-dependence from $N_f = 2+1$ lattice QCD*, JHEP **03** (2016) 155 [1512.06746].

[205] S. Borsanyi et al., *Calculation of the axion mass based on high-temperature lattice quantum chromodynamics*, Nature **539** (2016) 69 [1606.07494].

[206] E. Berkowitz, M. I. Buchoff and E. Rinaldi, *Lattice QCD input for axion cosmology*, Phys. Rev. D **92** (2015) 034507 [1505.07455].

[207] M. Dine, P. Draper, L. Stephenson-Haskins and D. Xu, *Axions, Instantons, and the Lattice*, Phys. Rev. D **96** (2017) 095001 [1705.00676].

[208] P. Petreczky, H.-P. Schadler and S. Sharma, *The topological susceptibility in finite temperature QCD and axion cosmology*, Phys. Lett. B **762** (2016) 498 [1606.03145].

[209] L. Fleury and G. D. Moore, *Axion dark matter: strings and their cores*, JCAP **01** (2016) 004 [1509.00026].

[210] V. B. . Klaer and G. D. Moore, *The dark-matter axion mass*, JCAP **11** (2017) 049 [1708.07521].

[211] R. T. Co, L. J. Hall and K. Harigaya, *Predictions for Axion Couplings from ALP Cogenesis*, JHEP **01** (2021) 172 [2006.04809].

[212] N. Blinov, M. J. Dolan, P. Draper and J. Kozaczuk, *Dark matter targets for axionlike particle searches*, Phys. Rev. D **100** (2019) 015049 [1905.06952].

[213] P. Arias, D. Cadamuro, M. Goodsell, J. Jaeckel, J. Redondo and A. Ringwald, *WISPy Cold Dark Matter*, JCAP **06** (2012) 013 [1201.5902].

[214] C. A. J. O'Hare, G. Pierobon, J. Redondo and Y. Y. Y. Wong, *Simulations of axionlike particles in the postinflationary scenario*, Phys. Rev. D **105** (2022) 055025 [2112.05117].

[215] C. A. J. O'Hare and E. Vitagliano, *Cornering the axion with CP-violating interactions*, Phys. Rev. D **102** (2020) 115026 [2010.03889].

[216] E. Hardy and R. Lasenby, *Stellar cooling bounds on new light particles: plasma mixing effects*, JHEP **02** (2017) 033 [1611.05852].

[217] J. Bergé, P. Brax, G. Métris, M. Pernot-Borràs, P. Touboul and J.-P. Uzan, *MICROSCOPE Mission: First Constraints on the Violation of the Weak Equivalence Principle by a Light Scalar Dilaton*, Phys. Rev. Lett. **120** (2018) 141101 [1712.00483].

[218] G. L. Smith, C. D. Hoyle, J. H. Gundlach, E. G. Adelberger, B. R. Heckel and H. E. Swanson, *Short range tests of the equivalence principle*, Phys. Rev. D **61** (2000) 022001.

[219] D. J. Kapner, T. S. Cook, E. G. Adelberger, J. H. Gundlach, B. R. Heckel, C. D. Hoyle and H. E. Swanson, *Tests of the gravitational inverse-square law below the dark-energy length scale*, Phys. Rev. Lett. **98** (2007) 021101 [hep-ph/0611184].

[220] J. Lee, E. Adelberger, T. Cook, S. Fleischer and B. Heckel, *New Test of the Gravitational $1/r^2$ Law at Separations down to 52 μm*, Phys. Rev. Lett. **124** (2020) 101101 [2002.11761].

[221] J. K. Hoskins, R. D. Newman, R. Spero and J. Schultz, *Experimental tests of the gravitational inverse square law for mass separations from 2-cm to 105-cm*, Phys. Rev. D **32** (1985) 3084.

[222] J. Ke, J. Luo, C.-G. Shao, Y.-J. Tan, W.-H. Tan and S.-Q. Yang, *Combined Test of the Gravitational Inverse-Square Law at the Centimeter Range*, Phys. Rev. Lett. **126** (2021) 211101.

[223] L.-C. Tu, S.-G. Guan, J. Luo, C.-G. Shao and L.-X. Liu, *Null Test of Newtonian Inverse-Square Law at Submillimeter Range with a Dual-Modulation Torsion Pendulum*, Phys. Rev. Lett. **98** (2007) 201101.

[224] S.-Q. Yang, B.-F. Zhan, Q.-L. Wang, C.-G. Shao, L.-C. Tu, W.-H. Tan and J. Luo, *Test of the Gravitational Inverse Square Law at Millimeter Ranges*, Phys. Rev. Lett. **108** (2012) 081101.

[225] W.-H. Tan et al., *Improvement for Testing the Gravitational Inverse-Square Law at the Submillimeter Range*, Phys. Rev. Lett. **124** (2020) 051301.

[226] W.-H. Tan et al., *New Test of the Gravitational Inverse-Square Law at the Submillimeter Range with Dual Modulation and Compensation*, Phys. Rev. Lett. **116** (2016) 131101.

[227] A. A. Geraci, S. J. Smullin, D. M. Weld, J. Chiaverini and A. Kapitulnik, *Improved constraints on non-Newtonian forces at 10 microns*, Phys. Rev. D **78** (2008) 022002 [0802.2350].

[228] Y.-J. Chen, W. Tham, D. Krause, D. Lopez, E. Fischbach and R. Decca, *Stronger Limits on Hypothetical Yukawa Interactions in the 30–8000 nm Range*, Phys. Rev. Lett. **116** (2016) 221102 [1410.7267].

[229] B. R. Heckel, E. Adelberger, C. Cramer, T. Cook, S. Schlamminger and U. Schmidt, *Preferred-Frame and CP-Violation Tests with Polarized Electrons*, Phys. Rev. D **78** (2008) 092006 [0808.2673].

[230] D. J. Wineland, J. J. Bollinger, D. J. Heinzen, W. M. Itano and M. G. Raizen, *Search for anomalous spin-dependent forces using stored-ion spectroscopy*, Phys. Rev. Lett. **67** (1991) 1735.

[231] J. Lee, A. Almasi and M. Romalis, *Improved Limits on Spin-Mass Interactions*, *Phys. Rev. Lett.* **120** (2018) 161801 [1801.02757].

[232] N. Crescini, C. Braggio, G. Carugno, P. Falferi, A. Ortolan and G. Ruoso, *The QUAX-g_p g_s experiment to search for monopole-dipole Axion interaction*, *Nucl. Instrum. Meth. A* **842** (2017) 109 [1606.04751].

[233] N. Crescini, C. Braggio, G. Carugno, P. Falferi, A. Ortolan and G. Ruoso, *Improved constraints on monopole-dipole interaction mediated by pseudo-scalar bosons*, *Phys. Lett. B* **773** (2017) 677 [1705.06044].

[234] W. Terrano, E. Adelberger, J. Lee and B. Heckel, *Short-range spin-dependent interactions of electrons: a probe for exotic pseudo-Goldstone bosons*, *Phys. Rev. Lett.* **115** (2015) 201801 [1508.02463].

[235] S. A. Hoedl, F. Fleischer, E. G. Adelberger and B. R. Heckel, *Improved Constraints on an Axion-Mediated Force*, *Phys. Rev. Lett.* **106** (2011) 041801.

[236] XENON Collaboration, E. Aprile et al., *Light Dark Matter Search with Ionization Signals in XENON1T*, *Phys. Rev. Lett.* **123** (2019) 251801 [1907.11485].

[237] B. Venema, P. Majumder, S. Lamoreaux, B. Heckel and E. Fortson, *Search for a coupling of the Earth's gravitational field to nuclear spins in atomic mercury*, *Phys. Rev. Lett.* **68** (1992) 135.

[238] M. Safronova, D. Budker, D. DeMille, D. F. J. Kimball, A. Derevianko and C. Clark, *Search for New Physics with Atoms and Molecules*, *Rev. Mod. Phys.* **90** (2018) 025008 [1710.01833].

[239] K. Tullney et al., *Constraints on Spin-Dependent Short-Range Interaction between Nucleons*, *Phys. Rev. Lett.* **111** (2013) 100801 [1303.6612].

[240] A. Arvanitaki and A. A. Geraci, *Resonantly Detecting Axion-Mediated Forces with Nuclear Magnetic Resonance*, *Phys. Rev. Lett.* **113** (2014) 161801 [1403.1290].

[241] A. Hees, O. Minazzoli, E. Savalle, Y. V. Stadnik and P. Wolf, *Violation of the equivalence principle from light scalar dark matter*, *Phys. Rev. D* **98** (2018) 064051 [1807.04512].

[242] A. Arvanitaki, S. Dimopoulos and K. Van Tilburg, *Sound of Dark Matter: Searching for Light Scalars with Resonant-Mass Detectors*, *Phys. Rev. Lett.* **116** (2016) 031102 [1508.01798].

[243] A. Branca et al., *Search for an Ultralight Scalar Dark Matter Candidate with the AURIGA Detector*, *Phys. Rev. Lett.* **118** (2017) 021302 [1607.07327].

[244] BACON Collaboration, K. Beloy et al., *Frequency Ratio Measurements with 18-digit Accuracy Using a Network of Optical Clocks*, 2005.14694.

[245] O. Tretiak, X. Zhang, N. L. Figueroa, D. Antypas, A. Brogna, A. Banerjee, G. Perez and D. Budker, *Improved Bounds on Ultralight Scalar Dark Matter in the Radio-Frequency Range*, *Phys. Rev. Lett.* **129** (2022) 031301 [2201.02042].

[246] E. Savalle, A. Hees, F. Frank, E. Cantin, P.-E. Pottie, B. M. Roberts, L. Cros, B. T. Mcallister and P. Wolf, *Searching for Dark Matter with an Optical Cavity and an Unequal-Delay Interferometer*, *Phys. Rev. Lett.* **126** (2021) 051301 [2006.07055].

[247] K. Van Tilburg, N. Leefer, L. Bougas and D. Budker, *Search for ultralight scalar dark matter with atomic spectroscopy*, *Phys. Rev. Lett.* **115** (2015) 011802 [1503.06886].

[248] S. Aharony, N. Akerman, R. Ozeri, G. Perez, I. Savoray and R. Shaniv, *Constraining Rapidly Oscillating Scalar Dark Matter Using Dynamic Decoupling*, *Phys. Rev. D* **103** (2021) 075017 [1902.02788].

[249] S. M. Vermeulen et al., *Direct limits for scalar field dark matter from a gravitational-wave detector*, *Nature* **600** (2021) 424 [2103.03783].

[250] L. Aiello, J. W. Richardson, S. M. Vermeulen, H. Grote, C. Hogan, O. Kwon and C. Stoughton, *Constraints on Scalar Field Dark Matter from Colocated Michelson Interferometers*, *Phys. Rev. Lett.* **128** (2022) 121101 [2108.04746].

[251] W. M. Campbell, B. T. McAllister, M. Goryachev, E. N. Ivanov and M. E. Tobar, *Searching for Scalar Dark Matter via Coupling to Fundamental Constants with Photonic, Atomic and Mechanical Oscillators*, *Phys. Rev. Lett.* **126** (2021) 071301 [2010.08107].

[252] M. Filzinger, S. Dörscher, R. Lange, J. Klose, M. Steinel, E. Benkler, E. Peik, C. Lisdat and N. Huntemann, *Improved limits on the coupling of ultralight bosonic dark matter to photons from optical atomic clock comparisons*, 2301.03433.

[253] R. Oswald et al., *Search for Dark-Matter-Induced Oscillations of Fundamental Constants Using Molecular Spectroscopy*, *Phys. Rev. Lett.* **129** (2022) 031302 [2111.06883].

[254] A. Hees, J. Guéna, M. Abgrall, S. Bize and P. Wolf, *Searching for an oscillating massive scalar field as a dark matter candidate using atomic hyperfine frequency comparisons*, *Phys. Rev. Lett.* **117** (2016) 061301 [1604.08514].

[255] C. J. Kennedy, E. Oelker, J. M. Robinson, T. Bothwell, D. Kedar, W. R. Milner, G. E. Marti, A. Derevianko and J. Ye, *Precision Metrology Meets Cosmology: Improved Constraints on Ultralight Dark Matter from Atom-Cavity Frequency Comparisons*, *Phys. Rev. Lett.* **125** (2020) 201302 [2008.08773].

[256] L. Badurina, O. Buchmueller, J. Ellis, M. Lewicki, C. McCabe and V. Vaskonen, *Prospective sensitivities of atom interferometers to gravitational waves and ultralight dark matter*, *Phil. Trans. A. Math. Phys. Eng. Sci.* **380** (2021) 20210060 [2108.02468].

[257] MAGIS-100 Collaboration, M. Abe et al., *Matter-wave Atomic Gradiometer Interferometric Sensor (MAGIS-100)*, *Quantum Sci. Technol.* **6** (2021) 044003 [2104.02835].

[258] D. Antypas et al., *New Horizons: Scalar and Vector Ultralight Dark Matter*, 2203.14915.

[259] J. Manley, D. Wilson, R. Stump, D. Grin and S. Singh, *Searching for Scalar Dark Matter with Compact Mechanical Resonators*, *Phys. Rev. Lett.* **124** (2020) 151301 [1910.07574].

[260] A. A. Geraci, C. Bradley, D. Gao, J. Weinstein and A. Derevianko, *Searching for Ultralight Dark Matter with Optical Cavities*, *Phys. Rev. Lett.* **123** (2019) 031304 [1808.00540].

[261] I. Kozyryev, Z. Lasner and J. M. Doyle, *Enhanced sensitivity to ultralight bosonic dark matter in the spectra of the linear radical SrOH*, *Phys. Rev. A* **103** (2021) 043313 [1805.08185].

[262] D. E. Kaplan, A. Mitridate and T. Trickle, *Constraining fundamental constant variations from ultralight dark matter with pulsar timing arrays*, *Phys. Rev. D* **106** (2022) 035032 [2205.06817].

[263] M. Bordag, U. Mohideen and V. M. Mostepanenko, *New developments in the Casimir effect*, *Phys. Rept.* **353** (2001) 1 [quant-ph/0106045].

[264] R. S. Decca, D. Lopez, H. B. Chan, E. Fischbach, D. E. Krause and C. R. Jamell, *Constraining new forces in the Casimir regime using the isoelectronic technique*, *Phys. Rev. Lett.* **94** (2005) 240401 [hep-ph/0502025].

[265] A. O. Sushkov, W. J. Kim, D. A. R. Dalvit and S. K. Lamoreaux, *New Experimental Limits on Non-Newtonian Forces in the Micrometer Range*, *Phys. Rev. Lett.* **107** (2011) 171101 [1108.2547].

[266] T. A. Wagner, S. Schlamminger, J. H. Gundlach and E. G. Adelberger, *Torsion-balance tests of the weak equivalence principle*, *Class. Quant. Grav.* **29** (2012) 184002 [1207.2442].

[267] E. G. Adelberger, J. H. Gundlach, B. R. Heckel, S. Hoedl and S. Schlamminger, *Torsion balance experiments: A low-energy frontier of particle physics*, *Prog. Part. Nucl. Phys.* **62** (2009) 102.

[268] MICROSCOPE Collaboration, P. Touboul et al., *MICROSCOPE Mission: Final Results of the Test of the Equivalence Principle*, *Phys. Rev. Lett.* **129** (2022) 121102 [2209.15487].

[269] E. J. Chun and S. Yun, *Particle dispersion in the classical vector dark matter background*, *Phys. Rev. D* **106** (2022) 095027 [2205.03617].

[270] E. A. Shaw, M. P. Ross, C. A. Hagedorn, E. G. Adelberger and J. H. Gundlach, *Torsion-balance search for ultralow-mass bosonic dark matter*, *Phys. Rev. D* **105** (2022) 042007 [2109.08822].

[271] LIGO Scientific, KAGRA, Virgo Collaboration, R. Abbott et al., *Constraints on dark photon dark matter using data from LIGO's and Virgo's third observing run*, *Phys. Rev. D* **105** (2022) 063030 [2105.13085].

[272] M. A. Fedderke and A. Mathur, *Asteroids for ultralight dark-photon dark-matter detection*, 2210.09324.

[273] J. Manley, M. D. Chowdhury, D. Grin, S. Singh and D. J. Wilson, *Searching for vector dark matter with an optomechanical accelerometer*, *Phys. Rev. Lett.* **126** (2021) 061301 [2007.04899].

[274] P. W. Graham, D. E. Kaplan, J. Mardon, S. Rajendran and W. A. Terrano, *Dark Matter Direct Detection with Accelerometers*, *Phys. Rev. D* **93** (2016) 075029 [1512.06165].

[275] A. Caputo, A. J. Millar, C. A. J. O'Hare and E. Vitagliano, *Dark photon limits: A handbook*, *Phys. Rev. D* **104** (2021) 095029 [2105.04565].

[276] A. S. Goldhaber and M. M. Nieto, *Photon and Graviton Mass Limits*, *Rev. Mod. Phys.* **82** (2010) 939 [0809.1003].

[277] E. R. Williams, J. E. Faller and H. A. Hill, *New experimental Test of Coulomb's Law: A Laboratory Upper Limit on the Photon Rest Mass*, *Phys. Rev. Lett.* **26** (1971) 721.

[278] D. F. Bartlett and S. Loegl, *Limits on an Electromagnetic Fifth Force*, *Phys. Rev. Lett.* **61** (1988) 2285.

[279] L.-C. Tu, J. Luo and G. T. Gillies, *The Mass of the Photon*, *Rept. Prog. Phys.* **68** (2005) 77.

[280] D. Kroff and P. C. Malta, *Constraining Hidden Photons via Atomic Force Microscope Measurements and the Plimpton-Lawton Experiment*, *Phys. Rev. D* **102** (2020) 095015 [2008.02209].

[281] S. J. Plimpton and W. E. Lawton, *A Very Accurate Test of Coulomb's Law of Force Between Charges*, *Phys. Rev.* **50** (1936) 1066.

[282] J. Jaeckel and S. Roy, *Spectroscopy as a Test of Coulomb's Law: A Probe of the Hidden Sector*, *Phys. Rev. D* **82** (2010) 125020 [1008.3536].

[283] A. S. Goldhaber and M. M. Nieto, *Terrestrial and Extra-Terrestrial Limits on the Photon Mass*, *Rev. Mod. Phys.* **43** (1971) 277.

[284] E. Fischbach, H. Kloor, R. A. Langel, A. T. Y. Liu and M. Peredo, *New geomagnetic limits on the photon mass and on long range forces coexisting with electromagnetism*, *Phys. Rev. Lett.* **73** (1994) 514.

[285] G. Marocco, *Dark photon limits from magnetic fields and astrophysical plasmas*, 2110.02875.

[286] L. Davis, Jr., A. S. Goldhaber and M. M. Nieto, *Limit on the Photon Mass Deduced from Pioneer-10 Observations of Jupiter's Magnetic Field*, *Phys. Rev. Lett.* **35** (1975) 1402.

[287] T. Inada, T. Namba, S. Asai, T. Kobayashi, Y. Tanaka, K. Tamasaku, K. Sawada and T. Ishikawa, *Results of a Search for Paraphotons with Intense X-ray Beams at SPring-8*, *Phys. Lett. B* **722** (2013) 301 [1301.6557].

[288] R. Povey, J. Hartnett and M. Tobar, *Microwave Cavity Light Shining Through a Wall Optimization and Experiment*, *Phys. Rev. D* **82** (2010) 052003 [1003.0964].

[289] S. R. Parker, J. G. Hartnett, R. G. Povey and M. E. Tobar, *Cryogenic Resonant Microwave Cavity Searches for Hidden Sector Photons*, *Phys. Rev. D* **88** (2013) 112004 [1410.5244].

[290] ADMX Collaboration, A. Wagner et al., *A Search for Hidden Sector Photons with ADMX*, *Phys. Rev. Lett.* **105** (2010) 171801 [1007.3766].

[291] A. Romanenko et al., *New Exclusion Limit for Dark Photons from an SRF Cavity-Based Search (Dark SRF)*, 2301.11512.

[292] M. Danilov, S. Demidov and D. Gorbunov, *Constraints on Hidden Photons Produced in Nuclear Reactors*, *Phys. Rev. Lett.* **122** (2019) 041801 [1804.10777].

[293] H.-S. Zechlin, D. Horns and J. Redondo, *New Constraints on Hidden Photons using Very High Energy Gamma-Rays from the Crab Nebula*, *AIP Conf. Proc.* **1085** (2009) 727 [0810.5501].

[294] A. Caputo, H. Liu, S. Mishra-Sharma and J. T. Ruderman, *Dark Photon Oscillations in Our Inhomogeneous Universe*, *Phys. Rev. Lett.* **125** (2020) 221303 [2002.05165].

[295] J. Redondo, *Helioscope Bounds on Hidden Sector Photons*, *JCAP* **07** (2008) 008 [0801.1527].

[296] M. Schwarz, E.-A. Knabbe, A. Lindner, J. Redondo, A. Ringwald, M. Schneide, J. Susol and G. Wiedemann, *Results from the Solar Hidden Photon Search (SHIPS)*, *JCAP* **08** (2015) 011 [1502.04490].

[297] J. Frerick, F. Kahlhoefer and K. Schmidt-Hoberg, *A' view of the sunrise: Boosting helioscopes with angular information*, 2211.00022.

[298] J. Redondo and G. Raffelt, *Solar Constraints on Hidden Photons Re-visited*, *JCAP* **08** (2013) 034 [1305.2920].

[299] D. K. Hong, C. S. Shin and S. Yun, *Cooling of young neutron stars and dark gauge bosons*, *Phys. Rev. D* **103** (2021) 123031 [2012.05427].

[300] N. Vinyoles, A. Serenelli, F. L. Villante, S. Basu, J. Redondo and J. Isern, *New Axion and Hidden Photon Constraints from a Solar Data Global Fit*, *JCAP* **10** (2015) 015 [1501.01639].

[301] (XENON Collaboration)§, XENON Collaboration, E. Aprile et al., *Emission of single and few electrons in XENON1T and limits on light dark matter*, *Phys. Rev. D* **106** (2022) 022001 [2112.12116].

[302] S. D. McDermott and S. J. Witte, *Cosmological Evolution of Light Dark Photon Dark Matter*, *Phys. Rev. D* **101** (2020) 063030 [1911.05086].

[303] S. J. Witte, S. Rosauro-Alcaraz, S. D. McDermott and V. Poulin, *Dark Photon Dark Matter in the Presence of Inhomogeneous Structure*, *JHEP* **06** (2020) 132 [2003.13698].

[304] A. Caputo, H. Liu, S. Mishra-Sharma and J. T. Ruderman, *Modeling Dark Photon Oscillations in Our Inhomogeneous Universe*, *Phys. Rev. D* **102** (2020) 103533 [2004.06733].

[305] S. Dubovsky and G. Hernández-Chifflet, *Heating up the Galaxy with Hidden Photons*, *JCAP* **12** (2015) 054 [1509.00039].

[306] D. Wadekar and G. R. Farrar, *Gas-rich dwarf galaxies as a new probe of dark matter interactions with ordinary matter*, *Phys. Rev. D* **103** (2021) 123028 [1903.12190].

[307] A. Bhoonah, J. Bramante and N. Song, *Superradiant Searches for Dark Photons in Two Stage Atomic Transitions*, *Phys. Rev. D* **101** (2020) 055040 [1909.07387].

[308] DAMIC Collaboration, A. Aguilar-Arevalo et al., *Constraints on Light Dark Matter Particles Interacting with Electrons from DAMIC at SNOLAB*, *Phys. Rev. Lett.* **123** (2019) 181802 [1907.12628].

[309] B. Godfrey et al., *Search for dark photon dark matter: Dark E field radio pilot experiment*, *Phys. Rev. D* **104** (2021) 012013 [2101.02805].

[310] A. Phipps et al., *Exclusion Limits on Hidden-Photon Dark Matter near 2 neV from a Fixed-Frequency Superconducting Lumped-Element Resonator*, *Springer Proc. Phys.* **245** (2020) 139 [1906.08814].

[311] DOSUE-RR Collaboration, S. Kotaka et al., *Search for dark photon cold dark matter in the mass range 74–110 μeV$/c^2$ with a cryogenic millimeter-wave receiver*, 2205.03679.

[312] H. An, S. Ge, W.-Q. Guo, X. Huang, J. Liu and Z. Lu, *Direct detection of dark photon dark matter using radio telescopes*, 2207.05767.

[313] FUNK Experiment Collaboration, A. Andrianavalomahefa et al., *Limits from the Funk Experiment on the Mixing Strength of Hidden-Photon Dark Matter in the Visible and Near-Ultraviolet Wavelength Range*, *Phys. Rev. D* **102** (2020) 042001 [2003.13144].

[314] J. Chiles et al., *New Constraints on Dark Photon Dark Matter with Superconducting Nanowire Detectors in an Optical Haloscope*, *Phys. Rev. Lett.* **128** (2022) 231802 [2110.01582].

[315] H. An, X. Chen, S. Ge, J. Liu and Y. Luo, *Searching for Ultralight Dark Matter Conversion in Solar Corona using LOFAR Data*, 2301.03622.

[316] L. Manenti et al., *Search for dark photons using a multilayer dielectric haloscope equipped with a single-photon avalanche diode*, *Phys. Rev. D* **105** (2022) 052010 [2110.10497].

[317] B. T. McAllister, A. Quiskamp, C. O'Hare, P. Altin, E. Ivanov, M. Goryachev and M. Tobar, *Limits on Dark Photons, Scalars, and Axion-Electromagnetodynamics with The ORGAN Experiment*, 2212.01971.

[318] R. Cervantes et al., *Search for 70 μeV Dark Photon Dark Matter with a Dielectrically Loaded Multiwavelength Microwave Cavity*, *Phys. Rev. Lett.* **129** (2022) 201301 [2204.03818].

[319] K. Ramanathan, N. Klimovich, R. Basu Thakur, B. H. Eom, H. G. LeDuc, S. Shu, A. D. Beyer and P. K. Day, *Wideband Direct Detection Constraints on Hidden Photon Dark Matter with the QUALIPHIDE Experiment*, 2209.03419.

[320] X. Fan, G. Gabrielse, P. W. Graham, R. Harnik, T. G. Myers, H. Ramani, B. A. D. Sukra, S. S. Y. Wong and Y. Xiao, *One-Electron Quantum Cyclotron as a Milli-eV Dark-Photon Detector*, *Phys. Rev. Lett.* **129** (2022) 261801 [2208.06519].

[321] SENSEI Collaboration, L. Barak et al., *SENSEI: Direct-Detection Results on sub-GeV Dark Matter from a New Skipper-CCD*, *Phys. Rev. Lett.* **125** (2020) 171802 [2004.11378].

[322] P. Brun, L. Chevalier and C. Flouzat, *Direct Searches for Hidden-Photon Dark Matter with the SHUKET Experiment*, *Phys. Rev. Lett.* **122** (2019) 201801 [1905.05579].

[323] SuperCDMS Collaboration, T. Aralis et al., *Constraints on dark photons and axionlike particles from the SuperCDMS Soudan experiment*, *Phys. Rev. D* **101** (2020) 052008 [1911.11905]. [Erratum: Phys.Rev.D 103, 039901 (2021)].

[324] M. A. Fedderke, P. W. Graham, D. F. Jackson Kimball and S. Kalia, *Search for dark-photon dark matter in the SuperMAG geomagnetic field dataset*, *Phys. Rev. D* **104** (2021) 095032 [2108.08852].

[325] M. A. Fedderke, P. W. Graham, D. F. J. Kimball and S. Kalia, *Earth as a transducer for dark-photon dark-matter detection*, *Phys. Rev. D* **104** (2021) 075023 [2106.00022].

[326] A. V. Dixit, S. Chakram, K. He, A. Agrawal, R. K. Naik, D. I. Schuster and A. Chou, *Searching for Dark Matter with a Superconducting Qubit*, *Phys. Rev. Lett.* **126** (2021) 141302 [2008.12231].

[327] R. Cervantes, C. Braggio, B. Giaccone, D. Frolov, A. Grasselino, R. Harnik, O. Melnychuk, R. Pilipenko, S. Posen and A. Romanenko, *Deepest Sensitivity to Wavelike Dark Photon Dark Matter with SRF Cavities*, 2208.03183.

[328] J. Suzuki, T. Horie, Y. Inoue and M. Minowa, *Experimental Search for Hidden Photon CDM in the eV mass range with a Dish Antenna*, *JCAP* **09** (2015) 042 [1504.00118].

[329] S. Knirck, T. Yamazaki, Y. Okesaku, S. Asai, T. Idehara and T. Inada, *First Results from a Hidden Photon Dark Matter Search in the meV Sector Using a Plane-Parabolic Mirror System*, *JCAP* **11** (2018) 031 [1806.05120].

[330] N. Tomita, S. Oguri, Y. Inoue, M. Minowa, T. Nagasaki, J. Suzuki and O. Tajima, *Search for Hidden-Photon Cold Dark Matter Using a K-Band Cryogenic Receiver*, *JCAP* **09** (2020) 012 [2006.02828].

[331] L. H. Nguyen, A. Lobanov and D. Horns, *First results from the WISPDMX Radio Frequency Cavity Searches for Hidden Photon Dark Matter*, *JCAP* **10** (2019) 014 [1907.12449].

[332] XENON Collaboration, E. Aprile et al., *Excess Electronic Recoil Events in XENON1T*, *Phys. Rev. D* **102** (2020) 072004 [2006.09721].

[333] I. M. Bloch, A. Caputo, R. Essig, D. Redigolo, M. Sholapurkar and T. Volansky, *Exploring New Physics with O(keV) Electron Recoils in Direct Detection Experiments*, *JHEP* **01** (2021) 178 [2006.14521].

[334] H. An, M. Pospelov, J. Pradler and A. Ritz, *New Limits on Dark Photons from Solar Emission and keV Scale Dark Matter*, *Phys. Rev. D* **102** (2020) 115022 [2006.13929].