Observation of Atomic Antihydrogen

Physical Review Letters

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Citation Report

#	Article	IF	Citations
1	Photon-photon physics in very peripheral collisions of relativistic heavy ions. Journal of Physics G: Nuclear and Particle Physics, 1998, 24, 1657-1691.	1.4	124
2	Measuring the antihydrogen Lamb shift with a relativistic antihydrogen beam. Physical Review D, 1998, 57, 6649-6655.	1.6	14
3	Collisions involving antiparticles. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 1999, 357, 1259-1277.	1.6	9
4	Efficient excitation of Ps by 50-100 fs laser pulses. Journal of Physics B: Atomic, Molecular and Optical Physics, 1999, 32, L425-L431.	0.6	10
5	Ultra-low energy antihydrogen. Reports on Progress in Physics, 1999, 62, 1-60.	8.1	94
6	Antihydrogen from positronium impact with cold antiprotons: a Monte Carlo simulation. Journal of Physics B: Atomic, Molecular and Optical Physics, 1999, 32, 1923-1932.	0.6	15
7	Forty years of antiprotons. Reviews of Modern Physics, 1999, 71, 373-419.	16.4	76
8	Continuous Wave Coherent Lyman-Î±Radiation. Physical Review Letters, 1999, 83, 3828-3831.	2.9	76
9	CPTand Lorentz Tests in Hydrogen and Antihydrogen. Physical Review Letters, 1999, 82, 2254-2257.	2.9	299
10	Multichannele++Hcalculations via the modified Faddeev equations. Physical Review A, 1999, 59, 4813-4816.	1.0	9
11	The ingredients of cold antihydrogen: Simultaneous confinement of antiprotons and positrons at 4 K. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 1999, 455, 311-315.	1.5	51
12	Prospects for antiproton physics in the USA. Nuclear Physics A, 1999, 655, c390-c399.	0.6	0
13	Formation of low-energy antihydrogen. Nuclear Physics A, 1999, 655, c363-c368.	0.6	0
14	Antihydrogen production and precision experiments on trapped cold antihydrogen. , 1999, 119, 301-304.		4
15	Corrections to the Born-Oppenheimer approximation as applied to a system made up of hydrogen and antihydrogen. International Journal of Quantum Chemistry, 1999, 74, 645-652.	1.0	23
16	Hydrogenâ€“anti-hydrogen elastic scattering using fully quantal method. Europhysics Letters, 2000, 49, 558-563.	0.7	34
17	Through the looking glass. Nature, 2000, 406, 556-558.	13.7	67
18	Towards laser spectroscopy of antihydrogen. , 2000, 127, 167-174.		2

#	Article	IF	Citations
19	Excitation and ionization of positronium by 50â€“100 fs laser pulses. , 2000, 127, 185-188.		2
20	Formation of Anti-Hydrogen in Presence of Laser Field in Antiproton-Positronium Collisions. Physica Scripta, 2000, 61, 657-661.	1.2	1
21	Field-Induced Electron-Ion Recombination: A Novel Route towards Neutral (Anti-)matter. Physical Review Letters, 2000, 84, 3799-3802.	2.9	48
22	Low Energy (Anti)atoms for Precision Tests of Basic Physics. Brazilian Journal of Physics, 2001, 31, 203.	0.7	1
23	First positron cooling of antiprotons. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2001, 507, 1-6.	1.5	126
24	Pair production with electron capture in peripheral collisions of relativistic heavy ions. Nuclear Physics A, 2001, 683, 635-648.	0.6	12
25	Producing Slow Antihydrogen for a Test of CPT Symmetry with ATHENA. Hyperfine Interactions, 2001, 138, 153-158.	0.2	7
26	Peripheral Collisions of Relativistic Heavy Ions. Acta Physica Hungarica A Heavy Ion Physics, 2001, 14, 51-61.	0.4	1
27	Bound-free electron-positron pair production in relativistic heavy-ion collisions. Physical Review A, 2001, 63, .	1.0	37
28	Helium-Antihydrogen Interaction: The Born-Oppenheimer Potential Energy Curve. Physical Review Letters, 2002, 88, 163201.	2.9	30
29	Possibilities for achieving antihydrogen recombination and trapping using a nested Penning trap and a magnetic well. Physics of Plasmas, 2002, 9, 3289-3302.	0.7	27
30	Antihydrogen-formation cross sections in antiproton-positronium collisions with a time-dependent coupled-channel method. Physical Review A, 2002, 65, .	1.0	17
31	Accurate BornÂOppenheimer potential energy curve for the hydrogenÂantihydrogen system. Journal of Physics B: Atomic, Molecular and Optical Physics, 2002, 35, L435-L440.	0.6	39
32	CERN Group Detects More than 100 Antihydrogens. Physics Today, 2002, 55, 17-19.	0.3	2
33	Background-Free Observation of Cold Antihydrogen with Field-Ionization Analysis of Its States. Physical Review Letters, 2002, 89, 213401.	2.9	515
34	Production and detection of cold antihydrogen atoms. Nature, 2002, 419, 456-459.	13.7	719
35	Coherent Î³Î³ and Î³A interactions in very peripheral collisions at relativistic ion colliders. Physics Reports, 2002, 364, 359-450.	10.3	365
36	Stacking of cold antiprotons. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2002, 548, 140-145.	1.5	53

#	Article	IF	Citations
37	One- and Two-Photon Physics with Relativistic Heavy Ions. Acta Physica Hungarica A Heavy Ion Physics, 2002, 15, 359-368.	0.4	0
38	Cold antihydrogen atoms. Applied Physics B: Lasers and Optics, 2003, 77, 713-717.	1.1	6
39	Gauge principle revisited: Towards a unification of spaceâ€“time and internal gauge interactions. Journal of Mathematical Physics, 2003, 44, 5166-5184.	0.5	6
40	Antihydrogen-hydrogen elastic scattering at thermal energies using an atomic-orbital technique. Physical Review A, 2003, 67, .	1.0	17
41	PHOTON EXCHANGE IN NUCLEUSâ€“NUCLEUS COLLISIONS. International Journal of Modern Physics A, 2003, 18, 685-723.	0.5	3
42	Dense antihydrogen: its production and storage to envision antimatter propulsion. Journal of Optics B: Quantum and Semiclassical Optics, 2003, 5, S547-S552.	1.4	5
43	Towards laser spectroscopy of antihydrogen. Journal of Physics B: Atomic, Molecular and Optical Physics, 2003, 36, 649-654.	0.6	8
44	Current state of 'cold' antihydrogen research. Physics-Uspekhi, 2003, 46, 227-257.	0.8	12
45	Cold Antihydrogen Atoms. Physica Scripta, 2004, 70, C30-C34.	1.2	2
46	Dependence of the static leptonic properties on the internuclear distance in the and systems. Journal of Physics B: Atomic, Molecular and Optical Physics, 2004, 37, 2211-2219.	0.6	9
47	First Measurement of the Velocity of Slow Antihydrogen Atoms. Physical Review Letters, 2004, 93, 073401.	2.9	63
48	Antiatomâ€“atom scattering with the close-coupling model. Nuclear Instruments & Methods in Physics Research B, 2004, 221, 12-20.	0.6	1
49	First production and detection of cold antihydrogen atoms. Nuclear Instruments & Methods in Physics Research B, 2004, 214, 11-16.	0.6	4
50	Observations of cold antihydrogen. Nuclear Instruments & Methods in Physics Research B, 2004, 214, 22-30.	0.6	5
51	The ATHENA antihydrogen apparatus. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2004, 518, 679-711.	0.7	69
52	The route to ultra-low energy antihydrogen. Physics Reports, 2004, 402, 1-101.	10.3	74
53	The first cold antihydrogen. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2004, 532, 229-236.	0.7	1
54	Emerging science and technology of antimatter plasmas and trap-based beams. Physics of Plasmas, 2004, 11, 2333-2348.	0.7	170

#	Article	IF	Citations
55	Observation of Cold Antihydrogen. Nuclear Physics A, 2005, 752, 77-86.	0.6	0
56	Stability of few-charge systems in quantum mechanics. Physics Reports, 2005, 413, 1-90.	10.3	65
57	Cooling of Antihydrogen and Antiprotons to Ultracold Temperatures. AIP Conference Proceedings, 2005, , .	0.3	0
58	Atoms made entirely of antimatter: Two methods produce slow antihydrogen. Advances in Atomic, Molecular and Optical Physics, 2005, 50, 155-217.	2.3	70
59	Results from ATHENA. AIP Conference Proceedings, 2005, , .	0.3	5
60	HÂ¯â^'Heelastic scattering at low energies: Contribution of nonzero partial waves. Physical Review A, 2005, 71, .	1.0	6
61	HÂ¯â^'Liscattering and enhancedHÂ¯cooling. Physical Review A, 2005, 72, .	1.0	3
62	PHYSICS OF ULTRA-PERIPHERAL NUCLEAR COLLISIONS. Annual Review of Nuclear and Particle Science, 2005, 55, 271-310.	3.5	345
63	Diffractive Higgs production from intrinsic heavy flavors in the proton. Physical Review D, 2006, 73, .	1.6	48
64	Tests of fundamental symmetries and interactions â€“ using nuclei and lasers. Hyperfine Interactions, 2006, 171, 41-55.	0.2	1
65	Towards antihydrogen confinement with the ALPHA antihydrogen trap. Hyperfine Interactions, 2006, 172, 81-89.	0.2	3
66	Pair production from 10 GeV to 10 ZeV. Radiation Physics and Chemistry, 2006, 75, 696-711.	1.4	25
67	A novel cooling scheme for antiprotons. New Journal of Physics, 2006, 8, 45-45.	1.2	59
68	Scattering ofHÂ¯(1s)off metastable helium atom at thermal energies. Physical Review A, 2006, 73, .	1.0	1
69	s-wave elastic scattering of antihydrogen off atomic alkali-metal targets. Physical Review A, 2006, 73, .	1.0	4
70	Formation of antihydrogen in the ground state. Canadian Journal of Physics, 2007, 85, 393-399.	0.4	0
71	Higgs diffractive production. Nuclear Physics A, 2007, 782, 118-125.	0.6	2
72	Testing CPT invariance with antiprotonic atoms. Radiation Physics and Chemistry, 2007, 76, 397-403.	1.4	2

#	Article	IF	Citations
73	Bound-free<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msup><mml:mi>e</mml:mi><mml:mo>+</mml:mo></mml:msup><mml:msup><mml:mi></mml:mi></mml:m creation with a linearly polarized laser field and a nuclear field. Physical Review A, 2008, 78, .	1.0	18
74	Antihydrogen for precision tests in physics. Contemporary Physics, 2008, 49, 29-41.	0.8	3
75	ADâ€”A Laboratory for Low Energy Antiproton Physics. Nuclear Physics News, 2009, 19, 5-13.	0.1	1
76	The mechanisms of antihydrogen formationThis paper was presented at the International Conference on Precision Physics of Simple Atomic Systems, held at University of Windsor, Windsor, Ontario, Canada on 21â€“26 July 2008.. Canadian Journal of Physics, 2009, 87, 785-790.	0.4	0
77	Proposed new antiproton experiments at Fermilab. Hyperfine Interactions, 2009, 194, 145-151.	0.2	2
78	Cold antihydrogen: a new frontier in fundamental physics. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 3671-3682.	1.6	21
79	Single Particle Motion in Electric and Magnetic Fields. , 2010, , 45-71.		0
80	New experiments with antiprotons. Nuclear Physics A, 2010, 844, 206c-215c.	0.6	3
81	Production of exotic atoms at energies available at the CERN Large Hadron Collider. Physical Review C, 2010, 81, .	1.1	4
82	The Faddeev approach applied to antihydrogen formation. Journal of Physics B: Atomic, Molecular and Optical Physics, 2010, 43, 135202.	0.6	4
83	Antihydrogen physics: gravitation and spectroscopy in AEgISThis paper was presented at the International Conference on Precision Physics of Simple Atomic Systems, held at Ã‰cole de Physique, les Houches, France, 30 Mayâ€“â€“4 June, 2010.. Canadian Journal of Physics, 2011, 89, 17-24.	0.4	12
84	Matter-gravity couplings and Lorentz violation. Physical Review D, 2011, 83, .	1.6	266
85	Prospects for antiproton experiments at Fermilab. Hyperfine Interactions, 2012, 213, 217-226.	0.2	1
86	Atoms in flight and the remarkable connections between atomic and hadronic physics. Hyperfine Interactions, 2012, 209, 83-92.	0.2	2
87	Relativistic antihydrogen production by pair production with positron capture. Progress in Particle and Nuclear Physics, 2012, 67, 612-615.	5.6	3
88	Physics at CERNâ€™s Antiproton Decelerator. Progress in Particle and Nuclear Physics, 2013, 72, 206-253.	5.6	58
89	The AEgIS experiment at CERN for the measurement of antihydrogen gravity acceleration. Modern Physics Letters A, 2014, 29, 1430017.	0.5	20
90	The ATHENA experiment for the study of antihydrogen. International Journal of Modern Physics A, 2014, 29, 1430035.	0.5	6

#	Article	IF	Citations
91	The GBAR experiment. International Journal of Modern Physics Conference Series, 2014, 30, 1460263.	0.7	17
92	And there was light. , 2015, , .		0
93	Physics with antihydrogen. Journal of Physics B: Atomic, Molecular and Optical Physics, 2015, 48, 232001.	0.6	33
94	Experiments with low-energy antimatter. EPJ Web of Conferences, 2015, 96, 01007.	0.1	1
95	Plasma and trap-based techniques for science with positrons. Reviews of Modern Physics, 2015, 87, 247-306.	16.4	192
96	The common elements of atomic and hadronic physics. Hyperfine Interactions, 2015, 234, 113-123.	0.2	1
97	Current Status of Nuclear Physics Research. Brazilian Journal of Physics, 2015, 45, 730-755.	0.7	5
98	Ultraperipheral nuclear collisions. Physics Today, 2017, 70, 40-47.	0.3	5
100	QED theory of multiphoton transitions in atoms and ions. Physics Reports, 2018, 737, 1-84.	10.3	22
101	Experimental progress in positronium laser physics. European Physical Journal D, 2018, 72, 1.	0.6	123
102	The ASACUSA antihydrogen and hydrogen program: results and prospects. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2018, 376, 20170273.	1.6	33
103	Precision gravity tests and the Einstein Equivalence Principle. Progress in Particle and Nuclear Physics, 2020, 112, 103772.	5.6	56
104	Towards Laser Spectroscopy of Antihydrogen. , 2002, , 115-122.		1
105	Quantum Chemical Calculations on Positronic Systems. Progress in Theoretical Chemistry and Physics, 2003, , 439-463.	0.2	2
106	Production and detection of cold antihydrogen atoms. , 0, .		83
107	Production and detection of cold antihydrogen atoms. , 0, .		1
108	Production and detection of cold antihydrogen atoms. , 0, .		1
109	Production and detection of cold antihydrogen atoms. , 0, .		1

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110	Production and detection of cold antihydrogen atoms. , 0, .		1
111	Production and detection of cold antihydrogen atoms. , 0, .		1
112	Production and detection of cold antihydrogen atoms. , 0, .		1
113	Production and detection of cold antihydrogen atoms. , 0, .		1
114	Production and detection of cold antihydrogen atoms. , 0, .		1
115	Production and detection of cold antihydrogen atoms. , 0, .		1
116	Production and detection of cold antihydrogen atoms. , 0, .		1
117	Production and detection of cold antihydrogen atoms. , 0, .		1
118	Production and detection of cold antihydrogen atoms. , 0, .		1
119	Production and detection of cold antihydrogen atoms. , 0, .		1
120	Production and detection of cold antihydrogen atoms. , 0, .		1
121	Production and detection of cold antihydrogen atoms. , 0, .		1
122	Production and detection of cold antihydrogen atoms. , 0, .		1
123	Production and detection of cold antihydrogen atoms. , 0, .		2
124	Production and detection of cold antihydrogen atoms. , 0, .		1
125	Production and detection of cold antihydrogen atoms. , 0, .		1
126	Production and detection of cold antihydrogen atoms. , 0, .		1
127	Production and detection of cold antihydrogen atoms. , 0, .		1

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128	Production and detection of cold antihydrogen atoms. , 0, .		1
129	Production and detection of cold antihydrogen atoms. , 0, .		1
131	Production and detection of cold antihydrogen atoms. , 0, .		1
132	Production and detection of cold antihydrogen atoms. , 0, .		1
133	Production and detection of cold antihydrogen atoms. , 0, .		1
134	Production and detection of cold antihydrogen atoms. , 0, .		32
135	Production and detection of cold antihydrogen atoms. , 0, .		1
136	Production and detection of cold antihydrogen atoms. , 0, .		1
137	Production and detection of cold antihydrogen atoms. , 0, .		1
138	Production and detection of cold antihydrogen atoms. , 0, .		1
139	Production and detection of cold antihydrogen atoms. , 0, .		1
140	Production and detection of cold antihydrogen atoms. , 0, .		1
141	Production and detection of cold antihydrogen atoms. , 0, .		13
142	Production and detection of cold antihydrogen atoms. , 0, .		3
143	Production and detection of cold antihydrogen atoms. , 0, .		1
144	Production and detection of cold antihydrogen atoms. , 0, .		1
145	Production and detection of cold antihydrogen atoms. , 0, .		1
146	Production and detection of cold antihydrogen atoms. , 0, .		1

#	Article	IF	Citations
147	Production and detection of cold antihydrogen atoms. , 0, .		1
148	Production and detection of cold antihydrogen atoms. , 0, .		1
149	Production and detection of cold antihydrogen atoms. , 0, .		1
150	Production and detection of cold antihydrogen atoms. , 0, .		1
151	Production and detection of cold antihydrogen atoms. , 0, .		1
152	Production and detection of cold antihydrogen atoms. , 0, .		1
153	Production and detection of cold antihydrogen atoms. , 0, .		1
154	Production and detection of cold antihydrogen atoms. , 0, .		1
155	Production and detection of cold antihydrogen atoms. , 0, .		1
156	Production and detection of cold antihydrogen atoms. , 0, .		1
157	Production and detection of cold antihydrogen atoms. , 0, .		1
158	Photonuclear and Two-Photon Interactions at High-Energy Nuclear Colliders. Annual Review of Nuclear and Particle Science, 2020, 70, 323-354.	3.5	53
159	Theoretical Aspects of Antihydrogen Studies. Journal of Plasma and Fusion Research, 2004, 80, 1006-1011.	0.4	2
162	Tests of fundamental symmetries and interactions â€" using nuclei and lasers. , 2007, , 41-55.		0
163	Towards antihydrogen confinement with the ALPHA antihydrogen trap. , 2007, , 81-89.		0
164	Proposed new antiproton experiments at Fermilab. , 2009, , 493-499.		0
165	Atomic Physics of the Antimatter Explored with Slow Antiprotons. Radioisotopes, 2010, 59, 37-48.	0.1	0
167	Atoms in flight and the remarkable connections between atomic and hadronic physics. , 2012, , 83-92.		0

#	Article	IF	Citations
169	Fundamental Physics with Antihydrogen. Springer Tracts in Modern Physics, 2014, , 203-221.	0.1	1
170	Bound-free pair production with a correction term in relativistic heavy-ion collisions. Turkish Journal of Physics, 2017, 41, 227-237.	0.5	0
171	Positronium for Antihydrogen Production in the AEGIS Experiment. Acta Physica Polonica A, 2017, 132, 1443-1449.	0.2	0
172	Tests of the CPT Invariance at the Antiproton Decelerator of CERN. Ukrainian Journal of Physics, 2019, 64, 589.	0.1	1
173	On Possible Formation of Matter-Antimatter Exotic Molecular Structures. Open Access Library Journal (oalib), 2020, 07, 1-27.	0.1	1
174	Positron Physics in a New Perspective. , 2001, , 53-82.		0
175	Towards Laser Spectroscopy of Antihydrogen. , 2001, , 521-527.		0
177	Plasmas Created in the Interaction of Antiprotons with Atomic and Ionized Hydrogen Isotopes. Suggested Fuels for Space Engines. Journal of High Energy Physics Gravitation and Cosmology, 2022, 08, 14-24.	0.3	0
178	Low Energy Antimatter Physics. Universe, 2022, 8, 123.	0.9	0
179	Antiprotonic bound systems. Progress in Particle and Nuclear Physics, 2022, 125, 103964.	5.6	5
188	Low Energy Antimatter. Moscow University Physics Bulletin (English Translation of Vestnik) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 342 Tc	0.1	0
191	Study of Fundamental Laws with Antimatter. Tutorials, Schools, and Workshops in the Mathematical Sciences, 2022, , 113-120.	0.3	0