

# Livio Gianfrani

## List of Publications by Year in descending order

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129  
papers

3,116  
citations

159585

30  
h-index

197818

49  
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132  
all docs

132  
docs citations

132  
times ranked

1472  
citing authors



#	ARTICLE	IF	CITATIONS
19	Dual-laser frequency-stabilized cavity ring-down spectroscopy for water vapor density measurements. Metrologia, 2018, 55, 662-669.	1.2	11
20	Precision spectroscopy of HD at $1.38 \mu\text{m}$ . Physical Review A, 2018, 98, .	2.5	30
21	Highly accurate intensity factors of pure CO <sub>2</sub> lines near $2 \mu\text{m}$ . Journal of Chemical Physics, 2017, 146, 244309.	3.0	25
22	Dispersion and relativistic corrections to the spectral line-shape models. Journal of Physics: Conference Series, 2017, 810, 012062.	0.4	1
23	Absolute frequency measurements of CHF <sub>3</sub> Doppler-free ro-vibrational transitions at $86 \mu\text{m}$ . Optics Letters, 2017, 42, 1911.	3.3	12
24	Metrology-grade sub-Doppler spectroscopy of CHF <sub>3</sub> at $8.6 \mu\text{m}$ . , 2017, , .		0
25	Doppler-Broadening Gas Thermometry at $1.39 \mu\text{m}$ : Towards a New Spectroscopic Determination of the Boltzmann Constant. , 2016, , .		1
26	Progress towards the determination of thermodynamic temperature with ultra-low uncertainty. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2016, 374, 20150046.	3.4	27
27	Precision spectroscopy of $^2\text{C}^2\text{H}_2$ at $1.4 \mu\text{m}$ . Physical Review A, 2016, 93, .	2.5	13
28	Hyperfine structure effects in Doppler-broadening thermometry on water vapor at $1.4 \mu\text{m}$ . Metrologia, 2016, 53, 800-804.	1.2	5
29	Linking the thermodynamic temperature to an optical frequency: recent advances in Doppler broadening thermometry. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2016, 374, 20150047.	3.4	42
30	Investigating the ultimate accuracy of Doppler-broadening thermometry by means of a global fitting procedure. Physical Review A, 2015, 92, .	2.5	10
31	Frequency-comb-assisted precision laser spectroscopy of CHF <sub>3</sub> around $8.6 \mu\text{m}$ . Journal of Chemical Physics, 2015, 143, 234202.	3.0	9
32	The Boltzmann constant from the $^2\text{C}^2\text{H}_2$ $18\text{O}$ vibration-rotation spectrum: complementary tests and revised uncertainty budget. Metrologia, 2015, 52, S233-S241.	1.2	29
33	Relativistic formulation of the Voigt profile. Physical Review A, 2015, 91, .	2.5	10
34	Characterization of the frequency stability of an optical frequency standard at $139 \mu\text{m}$ based upon noise-immune cavity-enhanced optical heterodyne molecular spectroscopy. Optics Express, 2015, 23, 1757.	3.4	17
35	Direct phase-locking of a $86 \mu\text{m}$ quantum cascade laser to a mid-IR optical frequency comb: application to precision spectroscopy of N <sub>2</sub> O. Optics Letters, 2015, 40, 304.	3.3	20
36	Narrow-linewidth quantum cascade laser at $86 \mu\text{m}$ . Optics Letters, 2014, 39, 4946.	3.3	24

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37	Line-narrowing effects in the near-infrared spectrum of water and precision determination of spectroscopic parameters. Journal of Chemical Physics, 2014, 140, 044310.	3.0	18
38	Recommended isolated-line profile for representing high-resolution spectroscopic transitions (IUPAC) Tj ETQq0 0 0 rgBT /Overlock 10 Tf	1.9	225
39	Absolute frequency stabilization of an extended-cavity diode laser by means of noise-immune cavity-enhanced optical heterodyne molecular spectroscopy. Optics Letters, 2014, 39, 2198.	3.3	28
40	Absorption-line-shape recovery beyond the detection-bandwidth limit: Application to the precision spectroscopic measurement of the Boltzmann constant. Physical Review A, 2014, 90, .	2.5	22
41	The Boltzmann constant from the shape of a molecular spectral line. Journal of Molecular Spectroscopy, 2014, 300, 131-138.	1.2	17
42	Experimental test of the quadratic approximation in the partially correlated speed-dependent hard-collision profile. Physical Review A, 2014, 90, .	2.5	26
43	Frequency-comb-calibrated Doppler broadening thermometry. Physical Review A, 2013, 88, .	2.5	7
44	Determination of the Boltzmann Constant by Means of Precision Measurements of $H_2$ $O$ Line Shapes at $1800\text{ cm}^{-1}$	7.8	73
45	Velocity effects on the shape of pure H <sub>2</sub> O isolated lines: Complementary tests of the partially correlated speed-dependent Keilson-Storer model. Journal of Chemical Physics, 2013, 138, 034302.	3.0	61
46	of the spectral shapes of CO $A_1$ $B_1$ $C_1$ $D_1$ $E_1$ $F_1$ $G_1$ $H_1$ $I_1$ $J_1$ $K_1$ $L_1$ $M_1$ $N_1$ $O_1$ $P_1$ $Q_1$ $R_1$ $S_1$ $T_1$ $U_1$ $V_1$ $W_1$ $X_1$ $Y_1$ $Z_1$ $A_2$ $B_2$ $C_2$ $D_2$ $E_2$ $F_2$ $G_2$ $H_2$ $I_2$ $J_2$ $K_2$ $L_2$ $M_2$ $N_2$ $O_2$ $P_2$ $Q_2$ $R_2$ $S_2$ $T_2$ $U_2$ $V_2$ $W_2$ $X_2$ $Y_2$ $Z_2$	2.5	66
47	Absolute molecular density determinations by direct referencing of a quantum cascade laser to an optical frequency comb. Applied Physics B: Lasers and Optics, 2013, 110, 155-162.	2.2	6
48	The IMERAPlus joint research project for determinations of the Boltzmann constant. , 2013, , .		5
49	Modulational instability analysis of the cylindrical nonlinear von Neumann equation. Journal of Plasma Physics, 2013, 79, 443-446.	2.1	3
50	Comb-assisted precision spectroscopy of NH <sub>3</sub> at 9.1 $\mu\text{m}$ . , 2013, , .		0
51	Precision mid-infrared frequency combs and spectroscopic applications. Proceedings of SPIE, 2013, , .	0.8	1
52	Precision spectroscopy of NH <sub>3</sub> at 9.1 $\mu\text{m}$ by a comb-referenced quantum cascade laser. , 2013, , .		0
53	Coherent phase lock of a 9 $\mu\text{m}$ quantum cascade laser to a 2 $\mu\text{m}$ thulium optical frequency comb. Optics Letters, 2012, 37, 4083.	3.3	48
54	Highly-accurate line shape studies in the near-IR spectrum of H <sub>2</sub> O: Implications for the spectroscopic determination of the Boltzmann constant. Journal of Physics: Conference Series, 2012, 397, 012029.	0.4	9

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55	Comb-assisted spectroscopy of CO <sub>2</sub> absorption profiles in the near- and mid-infrared regions. Applied Physics B: Lasers and Optics, 2012, 109, 385-390.	2.2	11
56	Amount-ratio determinations of water isotopologues by dual-laser absorption spectrometry. Physical Review A, 2012, 86, . Speed dependence of collision parameters in the	2.5	11
57	$H^{18}O$ near-IR spectrum: Experimental test of the quadratic approximation. Physical Review A, 2012, 85, .	2.5	30
58	Doppler-width thermodynamic thermometry by means of line-absorbance analysis. Physical Review A, 2011, 84, .	2.5	12
59	High-precision molecular interrogation by direct referencing of a quantum-cascade-laser to a near-infrared frequency comb. Optics Express, 2011, 19, 17520.	3.4	39
60	The lineshape problem in Doppler-width thermometry. Molecular Physics, 2011, 109, 2291-2298. Speed-dependent effects in the near-infrared spectrum of self-colliding	1.7	16
61	$H^{18}O$	2.5	54
62	Mid-infrared quantitative spectroscopy by comb-referencing of a quantum-cascade-laser: Application to the CO <sub>2</sub> spectrum at 4.3 $\mu$ m. Applied Physics Letters, 2011, 99, 251107.	3.3	35
63	Absolute frequency measurement of a water-stabilized diode laser at 1.384 $\mu$ m by means of a fiber frequency comb. Applied Physics B: Lasers and Optics, 2011, 102, 725-729.	2.2	29
64	Absolute frequency spectroscopy at 4.3 $\mu$ m by direct referencing of a Quantum-Cascade-Laser to an Er: Fiber laser-based frequency-comb. , 2011, , .		0
65	Direct Referencing of a Quantum-Cascade-Laser at 4.3 $\mu$ m to a Near-Infrared Frequency Comb. , 2011, , .		0
66	Design and Capabilities of the Temperature Control System for the Italian Experiment Based on Precision Laser Spectroscopy for a New Determination of the Boltzmann Constant. International Journal of Thermophysics, 2010, 31, 1360-1370.	2.1	26
67	Frequency metrology in the near-infrared spectrum of H <sub>2</sub> <sup>17</sup> O and H <sub>2</sub> <sup>18</sup> O molecules: testing a new inversion method for retrieval of energy levels. New Journal of Physics, 2010, 12, 103006.	2.9	22
68	Observing the Intrinsic Linewidth of a Quantum-Cascade Laser: Beyond the Schawlow-Townes Limit. Physical Review Letters, 2010, 104, 083904.	7.8	147
69	Offset-frequency locking of extended-cavity diode lasers for precision spectroscopy of water at 138- $\mu$ m. Optics Express, 2010, 18, 21851.	3.4	31
70	Quiet Cascade: Measuring QCL Intrinsic Linewidth. Optics and Photonics News, 2010, 21, 32.	0.5	2
71	The line shape problem in the near-infrared spectrum of self-colliding CO <sub>2</sub> molecules: Experimental investigation and test of semiclassical models. Journal of Chemical Physics, 2009, 130, 184306.	3.0	54
72	On the determination of the Boltzmann constant by means of precision molecular spectroscopy in the near-infrared. Comptes Rendus Physique, 2009, 10, 894-906.	0.9	37

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73	Absolute frequency stabilization of an extended-cavity diode laser against Doppler-free H <sub>2</sub> <sup>17</sup> O absorption lines at 1384 $\mu$ m. Optics Letters, 2009, 34, 3107.	3.3	27
74	Optical feedback cavity-enhanced absorption spectroscopy for in situ measurements of the ratio <sup>13</sup> C: <sup>12</sup> C in CO <sub>2</sub> . Applied Physics B: Lasers and Optics, 2008, 92, 459.	2.2	28
75	Advances in laser-based isotope ratio measurements: selected applications. Applied Physics B: Lasers and Optics, 2008, 92, 439-449.	2.2	123
76	An efficient approximation for a wavelength-modulated 2nd harmonic lineshape from a Voigt absorption profile. Journal of Quantitative Spectroscopy and Radiative Transfer, 2008, 109, 168-175.	2.3	17
77	Lamb-dip-locked quantum cascade laser for comb-referenced IR absolute frequency measurements. Optics Express, 2008, 16, 11637.	3.4	56
78	Primary Gas Thermometry by Means of Laser-Absorption Spectroscopy: Determination of the Boltzmann Constant. Physical Review Letters, 2008, 100, 200801.	7.8	83
79	Highly accurate determinations of CO <sub>2</sub> line strengths using intensity-stabilized diode laser absorption spectrometry. Journal of Chemical Physics, 2007, 127, 084311.	3.0	30
80	Frequency-comb-referenced quantum-cascade laser at 44 $\mu$ m. Optics Letters, 2007, 32, 988.	3.3	63
81	Oxygen isotope ratio measurements in CO <sub>2</sub> by means of a continuous-wave quantum cascade laser at 43 $\mu$ m. Optics Letters, 2007, 32, 3047.	3.3	20
82	An Intensity-Stabilized Diode-Laser Spectrometer for Sensitive Detection of $\text{NH}_3$ . IEEE Transactions on Instrumentation and Measurement, 2007, 56, 309-312.	4.7	18
83	Measuring the <sup>13</sup> C/ <sup>12</sup> C isotope ratio in atmospheric CO <sub>2</sub> by means of laser absorption spectrometry: a new perspective based on a 2.05 $\mu$ m diode laser. Isotopes in Environmental and Health Studies, 2006, 42, 47-56.	1.0	18
84	Doppler-free saturated-absorption spectroscopy of CO <sub>2</sub> at 43 $\mu$ m by means of a distributed feedback quantum cascade laser. Optics Letters, 2006, 31, 3040.	3.3	25
85	Laser Absorption Spectroscopy for Volcano Monitoring. Optics and Photonics News, 2006, 17, 24.	0.5	8
86	Looking into the volcano with a Mid-IR DFB diode laser and Cavity Enhanced Absorption Spectroscopy. Optics Express, 2006, 14, 11442.	3.4	56
87	High precision determinations of NH <sub>3</sub> concentration by means of diode laser spectrometry at 2.005 $\mu$ m. Applied Physics B: Lasers and Optics, 2006, 85, 257-263.	2.2	17
88	Diode laser absorption spectrometry for <sup>13</sup> CO <sub>2</sub> / <sup>12</sup> CO <sub>2</sub> isotope ratio analysis: Investigation on precision and accuracy levels. Applied Physics B: Lasers and Optics, 2005, 81, 863-869.	2.2	30
89	Method allows for continuous monitoring of volcanic gases. Eos, 2005, 86, 510.	0.1	1
90	A diode-laser-based spectrometer for in-situ measurements of volcanic gases. Applied Physics B: Lasers and Optics, 2004, 78, 235-240.	2.2	28

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91	First field determination of the $\hat{A}^{13}C/\hat{A}^{12}C$ isotope ratio in volcanic CO <sub>2</sub> by diode-laser. Optics Express, 2004, 12, 6515.	3.4	42
92	Assessing Soil Respiration by Means of Near-Infrared Diode Laser Spectroscopy. Applied Spectroscopy, 2004, 58, 1051-1056.	2.2	2
93	Real-time monitoring of volcanic emissions with a laser-based fiber spectrometer. , 2004, , .		0
94	High-precision determination of the <sup>13</sup> CO <sub>2</sub> / <sup>12</sup> CO <sub>2</sub> isotope ratio using a portable 2.008- $\hat{I}^{1/4}$ m diode-laser spectrometer. Applied Physics B: Lasers and Optics, 2003, 77, 119-124.	2.2	50
95	Isotope analysis of water by means of near infrared dual-wavelength diode laser spectroscopy. Optics Express, 2003, 11, 1566.	3.4	70
96	Combined interferometric and absorption-spectroscopic technique for determining molecular line strengths: Applications to CO <sub>2</sub> . Physical Review A, 2003, 67, .	2.5	21
97	Determination of the <sup>2</sup> H/ <sup>1</sup> H, <sup>17</sup> O/ <sup>16</sup> O, and <sup>18</sup> O/ <sup>16</sup> O isotope ratios in water by means of tunable diode laser spectroscopy at 1.39 $\hat{I}^{1/4}$ m. Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy, 2002, 58, 2389-2396.	3.9	51
98	Trace-gas analysis using diode lasers in the near-IR and long-path techniques. Optics and Lasers in Engineering, 2002, 37, 509-520.	3.8	20
99	Chemical and isotopic analysis using diode laser spectroscopy: applications to volcanic gas monitoring. Optics and Lasers in Engineering, 2002, 37, 131-142.	3.8	16
100	Optical methods in Earth Sciences. Optics and Lasers in Engineering, 2002, 37, 87-89.	3.8	2
101	Quantitative diode laser absorption spectroscopy near 2 $\hat{I}^{1/4}$ m with high precision measurements of CO <sub>2</sub> concentration. Review of Scientific Instruments, 2001, 72, 4228-4233.	1.3	19
102	High-precision measurements of CO <sub>2</sub> concentration in air by means of diode-laser absorption spectroscopy near 2 $\hat{I}^{1/4}$ m. , 2001, , .		1
103	Collisional-Broadened and Dicke-Narrowed Lineshapes of H <sub>2</sub> <sup>16</sup> O and H <sub>2</sub> <sup>18</sup> O Transitions at 1.39 $\hat{I}^{1/4}$ m. Journal of Molecular Spectroscopy, 2001, 205, 20-27.	1.2	36
104	Optical methods for monitoring of volcanoes: techniques and new perspectives. Journal of Volcanology and Geothermal Research, 2001, 109, 235-245.	2.1	12
105	Remote sensing of volcanic gases with a DFB-laser-based fiber spectrometer. Applied Physics B: Lasers and Optics, 2000, 70, 467-470.	2.2	34
106	Remote Measurements of Volcanic Gases With a Diode-Laser-Based Spectrometer. Optics and Photonics News, 2000, 11, 44.	0.5	3
107	Sub-Doppler spectroscopy of H <sub>2</sub> <sup>18</sup> O at 1.4 $\hat{A}^{1/4}$ m. Applied Physics B: Lasers and Optics, 2000, 70, 883-888.	2.2	10
108	Narrow H <sub>2</sub> <sup>18</sup> O lines and new absolute frequency references in the near-IR. Journal of Optics, 2000, 2, 310-313.	1.5	6

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109	Magnetic-field effects on molecular transitions in the far-infrared region: prospects for more-sensitive spectrometers. <i>Journal of the Optical Society of America B: Optical Physics</i> , 1999, 16, 301.	2.1	6
110	Cavity-enhanced absorption spectroscopy of molecular oxygen. <i>Journal of the Optical Society of America B: Optical Physics</i> , 1999, 16, 2247.	2.1	110
111	<title>Cavity-enhanced molecular spectroscopy: a powerful tool to detect trace gases</title>. , 1999, 3821, 90.		2
112	Long-pathlength spectroscopy of O <sub>2</sub> using the NICE-OHMS technique. , 1998, 3491, 794.		2
113	Gas concentration measurements with DFB lasers to monitor volcanic activity. , 1998, 3491, 783.		5
114	Investigation of the $1^1\Sigma_g^+(v=0) \rightarrow 3^1\Sigma_g^-(v=0)$ magnetic-dipole transitions in O <sub>2</sub> . <i>Physical Review A</i> , 1997, 55, 4597-4600.	2.5	7
115	Detection of H <sub>2</sub> O and CO <sub>2</sub> with distributed feedback diode lasers: measurement of broadening coefficients and assessment of the accuracy levels for volcanic monitoring. <i>Applied Optics</i> , 1997, 36, 9481.	2.1	14
116	Spectroscopic observation of the Faraday effect in the far infrared. <i>Optics Letters</i> , 1997, 22, 1896.	3.3	8
117	High-sensitivity detection of NO <sub>2</sub> using a 740 nm semiconductor diode laser. <i>Applied Physics B: Lasers and Optics</i> , 1997, 64, 487-491.	2.2	22
118	Monitoring of O <sub>2</sub> and NO <sub>2</sub> using tunable diode lasers in the near-infrared region. <i>Sensors and Actuators B: Chemical</i> , 1997, 39, 283-285.	7.8	16
119	Pressure-Broadening Investigation of NO <sub>2</sub> in the Near Infrared. <i>Journal of Molecular Spectroscopy</i> , 1997, 186, 207-212.	1.2	8
120	Temperature dependence of self-broadening in molecular-oxygen spectrum. <i>Nuovo Cimento Della Societa Italiana Di Fisica D - Condensed Matter, Atomic, Molecular and Chemical Physics, Biophysics</i> , 1996, 18, 557-564.	0.4	7
121	Test of the Symmetrization Postulate for Spin-0 Particles. <i>Physical Review Letters</i> , 1996, 76, 2840-2843.	7.8	53
122	Hyperfine structure and isotope-shift investigations of atomic nitrogen by saturation spectroscopy. <i>Physical Review A</i> , 1994, 50, 1082-1087.	2.5	13
123	High resolution spectroscopy of iridium in a hollow cathode discharge. <i>Zeitschrift Für Physik D-Atoms Molecules and Clusters</i> , 1993, 25, 113-116.	1.0	4
124	Spectroscopy of the 689 nm intercombination line of strontium using an extended-cavity InGaP/InGaAlP diode laser. <i>Applied Physics B: Lasers and Optics</i> , 1992, 55, 397-400.	2.2	29
125	Isotope shifts and hyperfine structures investigation of doubly excited levels in SrI. <i>Zeitschrift Für Physik D-Atoms Molecules and Clusters</i> , 1992, 23, 145-149.	1.0	4
126	Visible and ultraviolet high resolution spectroscopy of Ti I and Ti II. <i>Optics Communications</i> , 1991, 83, 300-306.	2.1	18



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127	Polarization spectroscopy of atomic oxygen by dye and semiconductor diode lasers. Nuovo Cimento Della Societa Italiana Di Fisica D - Condensed Matter, Atomic, Molecular and Chemical Physics, Biophysics, 1991, 13, 1221-1234.	0.4	5
128	A new approach to impedance atomic spectroscopy. Applied Physics B, Photophysics and Laser Chemistry, 1990, 51, 87-90.	1.5	5
129	Experimental indication of a nuclear volume contribution to the isotope shift of atomic oxygen. Optics Communications, 1990, 78, 158-162.	2.1	13