

Peter Domokos's list of publications

Articles

1. D. Nagy, P. Domokos
Nonequilibrium Quantum Criticality and Non-Markovian Environment: Critical Exponent of a Quantum Phase Transition
Physical Review Letters 115, 043601 (2015)
2. A. Vukics, T. Grießer, P. Domokos
Fundamental limitation of ultrastrong coupling between light and atoms
Physical Review A 92, 043835 (2015)
3. A. Dombi, A. Vukics, P. Domokos
Bistability effect in the extreme strong coupling regime of the Jaynes-Cummings model
European Physical Journal D 69, 60 (2015)
4. G. Kónya, G. Szirmai, D. Nagy, and P. Domokos
Damping of quasiparticles in a Bose-Einstein condensate coupled to an optical cavity
Physical Review A 90, 013623 (2014)
5. G. Kónya, G. Szirmai, D. Nagy, and P. Domokos
Photonic tuning of Beliaev damping in a superfluid
Physical Review A 89, 051601(R) (2014)
6. Z. Darázs, Z. Kurucz, O. Kálmán, T. Kiss, J. Fortágh, and P. Domokos
Parametric Amplification of the Mechanical Vibrations of a Suspended Nanowire by Magnetic Coupling to a Bose-Einstein Condensate
Physical Review Letters 112, 133603 (2014)
7. A. Vukics, T. Grießer, P. Domokos
Elimination of the A-Square Problem from Cavity QED
Physical Review Letters 112, 073601 (2014)
8. A. Dombi, A. Vukics, P. Domokos
Optical bistability in strong-coupling cavity QED with a few atoms
Journal of Physics B: At. Mol. Opt. Phys. 46 224010 (2013)
9. D. Nagy, G. Szirmai, P. Domokos
Cavity optomechanics with a trapped, interacting Bose-Einstein condensate
European Physical Journal D 67, 124 (2013)
10. H. Ritsch, P. Domokos, F. Brennecke, T. Esslinger
Cold atoms in cavity generated dynamical optical potentials
Reviews of Modern Physics 85, 553–601 (2013)
11. A. Dombi, P. Domokos
Scattering model description of cascaded cavity configurations
Physica Scripta T153, 014018 (2013)
12. A. Vukics, P. Domokos
Adequacy of the Dicke model in cavity QED: A counter-no-go statement
Physical Review A 86, 053807 (2012)
13. A. Xuereb, P. Domokos
Dynamical scattering models in optomechanics: Going beyond the 'coupled cavities' model
New Journal of Physics 14, 095027 (2012)

14. G. Kónya, D. Nagy, G. Szirmai, and P. Domokos
Finite-size scaling in the quantum phase transition of the open-system Dicke model
Physical Review A 86, Art. no. 013641 (2012)
15. O. Kálmán, T. Kiss, J. Fortágh, and P. Domokos
Quantum Galvanometer by Interfacing a Vibrating Nanowire and Cold Atoms
Nano Letters 12, 435–439 (2012)
16. G. Kónya, G. Szirmai, and P. Domokos
Multimode mean-field model for the quantum phase transition of a Bose-Einstein condensate in an optical resonator
European Physical Journal D 65, 33–42 (2011)
17. D. Nagy, G. Szirmai, and P. Domokos
Critical exponent of a quantum-noise-driven phase transition: The open-system Dicke model
Physical Review A 84, Art. no. 043637 (2011)
18. A. Xuereb, P. Domokos, P. Horak, and T. Freearde
Cavity cooling of atoms: within and without a cavity
European Physical Journal D 65, 273–278 (2011)
19. A. Xuereb, T. Freearde, P. Horak, and **P. Domokos**
Optomechanical Cooling with Generalized Interferometers
Physical Review Letters 105, 013602 (2010)
20. D. Nagy, G. Kónya, G. Szirmai, and **P. Domokos**
Dicke-Model Phase Transition in the Quantum Motion of a Bose-Einstein Condensate in an Optical Cavity
Physical Review Letters 104, 130401 (2010)
21. G. Szirmai, D. Nagy, and **P. Domokos**
Quantum noise of a Bose-Einstein condensate in an optical cavity, correlations, and entanglement
Physical Review A 81, 043639 (2010)
22. A. Xuereb, **P. Domokos**, P. Horak, and T. Freearde
Scattering theory of multi-level atoms interacting with arbitrary radiation fields
Physica Scripta T 140 (2010) 014010
23. D. Nagy, **P. Domokos**, A. Vukics, and H. Ritsch
Nonlinear quantum dynamics of two BEC modes dispersively coupled by an optical cavity
European Physical Journal D 55, 659–668 (2009)
24. A. Xuereb, **P. Domokos**, J. K. Asbóth, P. Horak, T. Freearde
Scattering theory of cooling and heating in optomechanical systems
Physical Review A 79, 053810 (2009)
25. G. Szirmai, D. Nagy, **P. Domokos**
Excess Noise Depletion of a Bose-Einstein Condensate in an Optical Cavity
Physical Review Letters 102, 080401 (2009)
26. D. Nagy, G. Szirmai, **P. Domokos**
Self-organization of a Bose-Einstein condensate in an optical cavity
European Physical Journal D 48 (1), 127-137 (2008)
27. J. K. Asbóth, H. Ritsch, **P. Domokos**
Optomechanical coupling in a one-dimensional optical lattice
Physical Review A 77, 063424 (2008)

28. B. L. Lev, A. Vukics, E. R. Hudson, B. C. Sawyer, **P. Domokos**, H. Ritsch, J. Ye
Prospects for the cavity-assisted laser cooling of molecules
Physical Review A 77, 023402 (2008)
29. G. Szirmai, **P. Domokos**
Geometric resonance cooling of polarizable particles in an optical waveguide
Physical Review Letters 99, 213602-1-4 (2007)
30. J. K. Asbóth, **P. Domokos**
Comment on “Coupled dynamics of atoms and radiation–pressure–driven interferometers”
Physical Review A 76, 057801-1-4, (2007)
31. J. K. Asbóth, H. Ritsch, **P. Domokos**
Collective excitations and instability of an optical lattice due to unbalanced pumping
Physical Review Letters 98, 203008 (2007)
32. D. Nagy, **P. Domokos**
Dipole-dipole instability of atom clouds in a far-detuned optical dipole trap
Physical Review A 75, 053416 (2007)
33. C. Maschler, H. Ritsch, A. Vukics, **P. Domokos**:
Entanglement assisted fast reordering of atoms in an optical lattice within a cavity at $T=0$
Optics Communications 273, 446-450 (2007)
34. D. Nagy, J. K. Asbóth, **P. Domokos**:
Collective cooling of Atoms in a Ring Cavity
Acta Physica Hungarica B 26/1-2 141-148 (2006)
35. D. Nagy, J. K. Asbóth, **P. Domokos**, H. Ritsch:
Self-organization of a laser-driven cold gas in a ring cavity
Europhysics Lett. 74, 254-260 (2006)
36. J. K. Asbóth, **P. Domokos**, H. Ritsch, and A. Vukics:
Self-organization of atoms in a cavity field: Threshold, bistability, and scaling laws
Physical Review A 72, 053417 (2005)
37. A. Vukics and **P. Domokos**:
Simultaneous cooling and trapping of atoms by a single cavity-field mode
Physical Review A 72, 031401(R) (2005)
38. T. Salzburger, **P. Domokos**, and H. Ritsch:
Theory of a single-atom laser including light forces
Physical Review A 72, 033805 (2005)
39. A. Vukics, J. Janszky, and **P. Domokos**:
Cavity cooling of atoms: a quantum statistical treatment
Journal of Physics B 38, 1453-1470 (2005)
40. C. Henkel, M. Nest, **P. Domokos**, and R. Folman:
Optical discrimination between spatial decoherence and thermalization of a massive object
Physical Review A 70 023810-1-10 (2004)
41. J. Asbóth, **P. Domokos**, and H. Ritsch:
Correlated motion of two atoms trapped in a single-mode cavity field
Physical Review A 70, 013414-1-11 (2004)
42. **P. Domokos**, A. Vukics, and H. Ritsch:
Anomalous Doppler effect and polariton-mediated cooling of two-level atoms
Physical Review Letters 92, 103601 (2004).

43. A. Vukics, **P. Domokos**, and H. Ritsch:
Multidimensional and interference effects in atom trapping by a cavity field
Journal of Optics B 6, 143-153 (2004).
44. **P. Domokos** and H. Ritsch:
Mechanical light effects in optical resonators
Journal of the Optical Society of America B 20, 1089–1122 (2003)
45. P. Horak, B. G. Klappauf, A. Haase, R. Folman, J. Schmiedmayer, **P. Domokos**, E. A. Hinds:
Possibility of single-atom detection on a chip
Physical Review A 67, 043806 (2003)
46. P. Horak, **P. Domokos** and H. Ritsch:
Giant lightshift of atoms near lossy multimode optical micro-waveguides
Europhysics Letters 61, 459 (2003).
47. **P. Domokos** and H. Ritsch:
Collective cooling and self-organization of atoms in a cavity
Physical Review Letters **89**, 253003 (2002).
48. T. Salzburger, **P. Domokos** and H. Ritsch:
Enhanced atom capturing in a high-Q cavity by help of several transverse modes
Optics Express 10, 1204-1214 (2002).
49. **P. Domokos**, T. Salzburger and H. Ritsch:
Dissipative motion of an atom with transverse coherent driving in a cavity with many degenerate modes
Physical Review A 66, 043406 (2002).
50. **P. Domokos**, P. Horak and H. Ritsch:
Quantum description of light-pulse scattering on a single atom in waveguides
Physical Review A 65, 033832 (2002).
51. **P. Domokos**, P. Horak and H. Ritsch:
Semiclassical theory of cavity-assisted light forces on atoms and applications
Fortschritte der Physik 49, 935-940 (2001).
52. **P. Domokos** and H. Ritsch:
Efficient loading and cooling in dynamic optical evanescent-wave microtraps
Europhysics Letters 54, 306-312 (2001).
53. **P. Domokos**, T. Kiss, and J. Janszky:
Selecting molecules in the vibrational and rotational ground state by deflection
European Physical Journal D 14, 49-53 (2001).
54. **P. Domokos**, P. Horak and H. Ritsch:
Semiclassical theory of cavity-assisted atom cooling
Journal of Physics B 34, 187-198 (2001).
55. **P. Domokos**, M. Gangl, and H. Ritsch:
Single atom detection in high-Q multimode cavities
Optics Communications 185, 115-123 (2000).
56. **P. Domokos**, T. Kiss, J. Janszky, Z. Kis, A. Zuchetti, W. Vogel:
Collapse and revival in laser-driven diatomic molecules
Chemical Physics Letters 322, 255-262 (2000).

57. **P. Domokos**, J. Hare, V. Lefevre, J. M. Raimond, S. Haroche, I. Protsenko, L. Davidovich:
Quantum theory of microlasers in the close-to-threshold regime
Laser Physics 10, 42-47 (2000);
58. I. Protsenko, **P. Domokos**, V. Lefevre, J. Hare, J. M. Raimond, L. Davidovich:
Quantum theory of a thresholdless laser
Physical Review A 59, 1667-1681 (1999);
59. F. Treussart, V. S. Ilchenko, J. F. Roch, **P. Domokos**, J. Hare, V. Lefevre, J. M. Raimond, S. Haroche:
Whispering gallery mode microlaser at liquid Helium temperature
Journal of Luminescence 76&77, 670-673 (1998);
60. S. Szabo, **P. Domokos**, P. Adam, J. Janszky:
Coherent-state representation on an infinitesimal interval in phase space
Physics Letters A 241, 203-206 (1998);
61. **P. Domokos**, M. Brune, J. M. Raimond, and S. Haroche:
Photon–number–state generation scheme in a cavity QED setup: a proposal
European Physical Journal D 1, 1-4 (1998);
62. P. Adam, J. Janszky, **P. Domokos**, and S. Szabo:
Preparation of two–mode anticorrelated photon-number state via atom de Broglie wave deflection
Journal of Modern Optics 44, 2125-2133 (1997);
63. **P. Domokos**, J. M. Raimond, S. Haroche, I. Protsenko, L. Davidovich:
Quantum noise in microlasers
acta physica slovacica 47, 273-276 (1997);
64. **P. Domokos**, P. Adam, J. Janszky, and A. Zeilinger:
Atom de Broglie wave deflection by a single cavity mode in the few photon limit: Quantum prism
Physical Review Letters 77, 1663-1666 (1996);
65. S. Szabo, P. Adam, J. Janszky, **P. Domokos**:
Construction of quantum states of the radiation field by discrete coherent–state superpositions
Physical Review A 53, 2698-2710 (1996);
66. **P. Domokos**, P. Adam, J. Janszky, and A. Zeilinger:
Quantum prism for atomic beams: Deflection by a single cavity mode in few photon limit
acta physica slovacica 46, 367-372 (1996);
67. P. Bardroff, E. Mayr, W. P. Schleich, **P. Domokos**, J. M. Raimond, M. Brune, S. Haroche:
Simulation of Quantum State Endoscopy
Physical Review A 53, 2736-2741 (1996);
68. J. Janszky, P. Adam, S. Szabo, **P. Domokos**:
Quantum state engineering via superpositions of Schrödinger kittens
acta physica slovacica 45, 403-409 (1995);
69. **P. Domokos**, J. M. Raimond, M. Brune, S. Haroche:
Simple cavity–QED two–bit universal quantum logic gate: The principle and expected performances
Physical Review A 52, 3554-3559 (1995);
70. J. Janszky, **P. Domokos**, S. Szabo, P. Adam:
Quantum state engineering via coherent state superpositions
Physical Review A 51, 4191-4193 (1995);
71. **P. Domokos**, P. Adam, J. Janszky:
One–dimensional coherent–state representation on a circle in phase space
Physical Review A 50, 4293-4297 (1994);

72. **P. Domokos**, J. Janszky, P. Adam:
Single-atom interference method for generating Fock state
Physical Review A 50, 3340-3344 (1994);
73. **P. Domokos**, J. Janszky, P. Adam, T. Larsen:
Role of quantum interference in producing nonclassical states
Quantum Optics 6, 187-199 (1994);
74. **P. Domokos**, J. Janszky:
Interaction of optical Schrödinger cats
Physics Letters A 186, 289-299 (1994);
75. J. Janszky, **P. Domokos**, P. Adam:
Coherent states on a circle and quantum interference
Physical Review A 48, 2213-2219 (1993);

Proceedings, book parts, lecture notes

1. P. Domokos, A. Xuereb, P. Horak and T. Freearge
Efficient optomechanical cooling in one-dimensional interferometers
Proc. SPIE Vol. 7951, 79510B (2011); doi:10.1117/12.880045
2. Marco Wilzbach, **Peter Domokos**, Thomas Fernholz, Ron Folman, Sönke Groth, Albrecht Haase, Christian Hock, Peter Horak, Bruce Klappauf, Michael Schwarz, and Jörg Schmiedmayer:
Integration of light and atom optics on an atom chip
AIP Conference Proceedings, May 10, 2004, Volume 709, Issue 1, p. 443
3. T. Kiss, P. Domokos, J. Janszky:
State selective manipulation of molecules: implementing Maxwell's demon
Quantum Limits to the Second Law: First International Conference, ed by D. P. Sheehan, American Institute of Physics (Conf. Proc. 643), p. 259–263 (2002).
4. Helmut Ritsch, **Peter Domokos**, Peter Horak, Markus Gangl:
Optical cooling in high-Q multimode cavities
Proceedings of the XV International Conference on Laser Spectroscopy (ICOLS 2001), eds. V. Vuletic, S. Chu, A. J. Kerman, and Cheng Chin, World Scientific, p. 184–192 (2002).
5. M. Gangl, P. Horak, **P. Domokos**, and H. Ritsch:
Collective cooling of neutral particles in cavities without spontaneous emission
Proceedings of the Symposium on Modern Problems of Laser Physics (MPLP 2000), Akademgorodok Novosibirsk, Russia, Eds. S. I. Bagayev and V. I. Denisov, p. 257–268 (2001)
6. **P. Domokos**, M. Brune, J. M. Raimond, S. Haroche:
Limits of quantum computing: analysis of a concrete algorithm
“Microcavities and photonic Bandgaps”, 551-558
eds. J. G. Rarity and C. Weisbuch, Kluwer Academic Publisher 1996.
7. J. Janszky, P. Adam, S. Szabo, **P. Domokos**:
Quantum state engineering via coherent-state superpositions
Proceedings of the 4. ICSSUR, NASA Conf. Publ. 3322, 45-50, 1996
8. J. Janszky, P. Adam, I. Földesi, **P. Domokos**:
Superposition of coherent states, Quantum interference, and one-dimensional representations
“Coherent States: Past, Present and Future”
eds. D. S. Feng, J. R. Klauder, M. R. Strayer, World Scientific, pp. 233–239 (1994)

9. J. Janszky, P. Adam, I. Földesi, **P. Domokos**:
Quantum interference and one-dimensional representations
4th European Quantum Electronics Conference 1993 Firenze Tech.Dig. p.741-744.
10. **P. Domokos**, J. Janszky, P. Adam:
Coherent states on a circle and quantum interference
Proc. SPIE Vol. 1983 Optics as a Key to High Technology, 100-101 (1993)
11. J. Janszky, P. Adam, I. Földesi, **P. Domokos**:
One-dimensional representations in quantum optics
Proc. SPIE Vol. 1983 Optics as a Key to High Technology, 57-62 (1993)

Papers in Hungarian

1. Domokos Péter:
Munkára fogott kvantummechanika (“Quantum mechanics at work”, in Hungarian)
Magyar Tudomány 174, 2013/6, 713–718
2. Domokos Péter:
Az atom–foton molekula (“The atom-photon molecule”, in Hungarian)
Magyar Tudomány 167, 2006/5, 531-535
3. P. Domokos:
A fény mechanikai hatása optikai rezonátorban (“The mechanical effects of light in optical resonators”, in Hungarian)
“A kvantumoptika és elektronika legújabb eredményei”, eds. Zs. Heiner and K. Osvay, Lecture notes of the 7th Spring School on Quantum Electronics (Balatonfüred, 2005), pp. 107-119, SZTE TTK, 2006, ISBN:963 482 779 9
4. Janszky József, Domokos Péter:
Kvantumoptika és kvantuminformatika (“Quantum optics and quantum information”, in Hungarian)
Magyar Tudomány, 2005/12, 1550-1557
5. Domokos Péter:
Semleges atomok lézeres hűtése és csapdázása (“Laser cooling and trapping of neutral atoms”, in Hungarian)
Fizikai Szemle, vol. XXV, pp. 193–198 (2005)
6. P. Domokos:
Cavity quantum electrodynamics (in hungarian)
“Fény–anyag kölcsönhatás, kvantumoptika”, eds. J. Bakos, Zs. Sörlei, S. Varró, Lecture notes of the 5th Spring School on Quantum Electronics (Pécs), p. 160–180 (1999).

Proceedings in Hungarian

7. A. Vukics, P. Domokos:
Anomalous Doppler effect and polariton cooling (in Hungarian) “Kvantumelektronika 2003”, V. Symposium on Quantumelectronics Researches in Hungary, ed. S. Varró, P-43 (2003).
8. **P. Domokos**, I. Protsenko, J. M. Raimond, S. Haroche:
The theory of microsphere lasers (in hungarian), “Kvantumelektronika’97”, III. Symposium on Quantumelectronics Researches in Hungary, ed. S. Varró, p. 32 (1997).

9. S. Szabo, **P. Domokos**, P. Adam, J. Janszky:

Coherent-state representation in an infinitesimal vicinity of vacuum (in hungarian), “Kvantumelektronika’97”, III. Symposium on Quantumelectronics Researches in Hungary, ed. S. Varró, p. 31 (1997).