

COLEMAN, Piers

Condensed Matter (Theory)

Distinguished Professor, Rutgers University.

Born 1958, Cheltenham, Gloucestershire, UK.

Nationality: UK/US Citizen

Education:

B.A., Cambridge University 1979

Ph.D., Princeton University 1984

Advisor: Prof. P. W. Anderson

Positions :

Distinguished Professor, Rutgers University	2002
Professor, Rutgers University	1997- 2002
Associate Professor, Rutgers University	1991- 1997
Assistant Professor, Rutgers University	1987- 1991
Junior Research Fellow, Trinity College, Cambridge	1984- 1989
Postdoctoral Fellow, ITP, U. C. Santa Barbara,	1984- 1986

Active Grants and Fellowships:

DOE Grant “Spin driven phenomena in Strongly Correlated Materials.”	\$450,000	2023-2025
N.S.F. Grant “Local Moment and Heavy Fermion Physics”	\$550,000	2019-2024

Awards, distinctions and visiting positions

JSPS Fellowship, ISSP, University of Tokyo, Japan	2018 Mar-May
Simons Foundation Research Fellow, KITP Santa Barbara, CA	2014 Sep-Dec
Sabbatical Visitor, Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brazil	2013 Apr-May
Sabbatical Visitor, Karlsruhe Institute for Technology, Germany	2013 Feb-Mar
U. London Chair Theoretical Condensed Matter Physics, Royal Holloway College,	2010-
Fellow, American Physics Society,	2000-
Fellow, Institute of Physics, UK	1999-
Visiting Fellow, University College, Oxford	1997 Jan-Jun
Lecturer du Troisieme Cycle, U. Lausanne, Switzerland	1991
Research Visitor, Landau Inst. , Moscow, USSR.	1989 Oct
Sloan Foundation Fellowship	1989
Wohlfarth Memorial Lecture, Imperial College, UK.	1989 Apr
Eliza Procter Fellowship, Princeton University.	1980-1981

Directorships, committees .

Chair, APS Buckley Prize Committee	2021
International Advisory committee, Strongly Correlated Electron Systems	1998-2023
Member, APS Nominating Committee	2019-2021
Member, European Science Foundation College of Experts	2018-
Member, Aspen Center for Physics	2018-
Chair, Gordon Research Conference on Correlated Electrons	2018
Codirector, Institute for Complex Adaptive Phenomena	2011-
Member, UK College of Engineering and Science Research Council	2012-
Organizer, KITP, Workshop on Iron Based Superconductivity	2014
Gordon Research Conferences, Selection and Scheduling Committee	2009- 2014
Member APS Panel on Public Affairs,	2007- 2010
Co-organizer 2008 NSF Boulder summer school	2007- 2008
Member, Editorial board, Reports on Progress in Physics	2007-
Organizer, I2CAM FAPERJ school, Rio de Janeiro,	2007, 2010
Organizer, Trieste Miniworkshop on Strongly Correlation	1992- 2012
Executive Committee, Institute for Complex Adaptive Matter	2006 -2011
Steering committee, UK "Portfolio research Partnership".	2005 -2008
Organizer, KITP, Workshop on Quantum Phase Transitions.	2005
Organizer, "Frontiers in Correlated Matter" Aspen Snowmass.	2004
Organizer, ICAM conf "Quantum Criticality", Columbia U.	2003 March
US Editor, Journal of Physics, Condensed Matter	1999-2000
Organizer, ITP, Santa Barbara Workshop on Non Fermi Liquids.	1996
Lecturer du Troisieme Cycle, U. Lausanne, Switzerland	1991
Les Houches Summer School, France . Invited Lecturer.	1991 Aug
Kathmandu Summer School, Nepal. Invited Lecturer.	1991 Jun
Advisory committee, ICVF, Rio de Janerio, Brazil	1990 Jul
US-Soviet Academy CMP scientific exchange, USSR.	1988 Oct

Outreach activities: Videos, performances and productions, websites

"Secrets of the Quantum Universe", P. Coleman, Interdisciplinary Honors Course, Rutgers, 2021
"Emergent behavior in Quantum Matter", P. Coleman and P. Chaikin, outreach video
 (Harvard Smithsonian, 2010) www.learner.org/courses/physics/unit/unit_vid.html?unit=8
"Music of the Quantum" musicofthequantum.rutgers.com

Past Students and Postdocs

Graduate Students:

Ian Ritchey.	(Rolls Royce, Chief Scientist UK)
Deng Feng Wang	(Financial Services, New York (deceased))
Junwu Gan.	(Financial Services, San Fransisco)
Eduardo Miranda.	(Professor, U. Campinas, Brazil)
Juana Moreno.	(Associate Prof, Lousianna State U)
John Hopkinson.	(Assistant Professor, U. Manitoba, Canada)
Revaz Ramashvili.	(Staff member, CNRS Toulouse)
Andrew Ho.	(Lecturer, Royal Holloway, U. London)
Indranil Paul.	(Staff member CNRS, Paris);
Nayana Shah.	(Associate Prof, U. Cincinatti)
Jerome Rech,	(Staff member, CNRS, Marseille)
Marianna Maltseva,	(Citi Bank, NY),
Lucia Palova,	(Physics High School Teacher, NJ),
Ilya Berndnikov,	(Goldman Sachs, London),
Rebecca Flint,	(Assoc. Prof, Iowa State U)
Aline Ramires,	(PSI, Zurich)
Victor Alexandrov,	(Pixel Labs, San Fransisco)
Ari Wugalter,	(Columbia Law School, NY)
Victor Drouin-Touchette,	(Assistant Professor, Sherbrooke U)
Aaditya Panighri,	(Rutgers)
Lau Liam,	(Rutgers)

Postdocs:

Andrew Schofield	(Vice-Chancellor, Lancaster University, UK)
Arghya Taraphder	(Lecturer, IIT Kharaghpur, India)
Hae Young Kee	(Prof, U. Toronto, Canada)
Chris Hooley	(Lecturer, U. St Andrews, UK)
Vikram Tripathi	(Lecturer, TIFR, Mumbai, India)
Wenjin Mao	(Financial Services, New York)
Eran Lebanon	(Data Mining, Israel)
Maxim Dzero.	(Prof, Kent State U., USA)

Andriy Nevidomskyy.	(Associate Prof, Rice U., USA)
Tzen Ong	(Riken, Japan)
Maxim Kharitinov	(U. Wurzburg)
Onur Erten	(Assistant Prof, Arizona State U, USA)
Po Yao Chang	(Assistant Prof, National Tsinghua U, Taiwan)
Yashar Komijani	(Assistant Prof, U. Cincinnati)
Elio Koenig	(Team Leader, Max Planck Stuttgart)
Tamaghna Hazra	(Postdoc, Rutgers)
Zekun Zhuang	(Postdoc, Rutgers)

Publications:(About 224 publications in refereed journals, 18500 citations. Google Scholar Citations H-index 62). * highly cited.

1. *Light-Driven Transitions in Quantum Paraelectrics*, Zekun Zhuang, Ahana Chakraborty, Premala Chandra, Piers Coleman, Pavel A. Volkov, [arXiv:2301.06161](#), Phys. Rev. B 107, 224307 (2023).
2. *Quantum order by disorder in Frustrated Spin Nanotubes* Joao C. Getelina, Zekun Zhuang, Premala Chandra, Piers Coleman, Peter P. Orth, S. L. Sondhi, [arXiv:2303.04690](#), Phys. Rev. B in press (2023).
3. *TBG as Topological Heavy Fermion: II. Analytical approximations of the model parameters* Dumitru Călugăru, Maksim Borovkov, Liam L.H. Lau, Piers Coleman, Zhi-Da Song, B. Andrei Bernevig, [arXiv:2303.03429](#), Low Temp. Phys. 49, 640-654 (2023).
4. *Topological Mixed Valence Model for Twisted Bilayer Graphene* Liam L.H. Lau, Piers Coleman, [arXiv:2303.02670](#) (2023).
5. *Analytic calculation of the vison gap in the Kitaev spin liquid*, Aaditya Panigrahi, Piers Coleman, Alexei Tsvelik [arXiv:2303.00093](#), Phys. Rev. B 108, 045151 (2023).
6. *Triplet pairing, orbital selectivity and correlations in Iron-based superconductors*, Yashar Komijani, Elio Koenig, Piers Coleman, [arXiv:2302.09702](#) (2023).
7. *Matrix Product Study of Spin Fractionalization in the 1D Kondo Insulator*, Jing Chen, E. Miles Stoudenmire, Yashar Komijani, Piers Coleman, [arXiv:2302.09701](#), Phys Rev Research in press (2024).
8. *Triplet pairing mechanisms from Hund's-Kondo models: applications to UTe₂ and CeRh₂As₂*, Tamaghna Hazra, Piers Coleman, [arXiv:2205.13529](#) , Phys. Rev. Lett. 130, 136002 (2023).

9. *Interplay of charge and spin fluctuations in a Hund's coupled impurity*, Victor Drouin-Touchette, Elio J. Koenig, Yashar Komijani, Piers Coleman, [arXiv:2203.05172](#), Phys. Rev. Research 4, L042011, (2022).
10. *Soluble limit and criticality of fermions in Z2 gauge theories*, Elio J. Koenig, Piers Coleman, Alexei M. Tsvelik, [arXiv:1912.11106](#) Phys. Rev. B 102, 155143 (2020).
11. *A solvable 3D Kondo lattice exhibiting odd-frequency pairing and order fractionalization*, Piers Coleman, Aaditya Panigrahi, Alexei Tsvelik, [arXiv:2203.04104](#) Phys. Rev. Lett. 129, 177601 (2022)
12. *Order Fractionalization in a Kitaev-Kondo model*, Alexei M. Tsvelik, Piers Coleman, [arXiv:2112.07781](#), Phys. Rev. B 106, 125144 (2022).
13. *Observation of a Critical Charge Mode in a Strange Metal* Hisao Kobayashi, Yui Sakaguchi, Hayato Kitagawa, Momoko Oura Shugo Ikeda, Kentaro Kuga, Shintaro Suzuki, Satoru Nakatsuji, Ryo Masuda, Yasuhiro Kobayashi, Makoto Seto, Yoshitaka Yoda, Kenji Tamasaku, Yashar Komijani, Premala Chandra, Piers Coleman, [arXiv:2202.12462](#) Science, Vol 379, 908-912 (2023).
14. *Triplet resonating valence bond theory and transition metal chalcogenides*, Elio J. König, Yashar Komijani, Piers Coleman, [arXiv:2109.03851](#), Phys. Rev. B 105, 075142 (2022).
15. *Superconductivity from energy fluctuations in dilute quantum critical polar metals*, Pavel A. Volkov, Premala Chandra, Piers Coleman, [arXiv:2106.11295](#), Nature Communications 13, 4599 (2022).
16. *Quasi-uniaxial pressure induced superconductivity in the stoichiometric compound UTe_2* , Chongli Yang, Jing Guo, Yazhou Zhou, Shu Cai, Vladimir A. Sidorov, Cheng Huang, Sijin Long, Youguo Shi, Qiuyun Chen, Shiyong Tan, Yu Gong, Yanchun Li, Xiaodong Li, Qi Wu, Piers Coleman, Tao Xiang, Liling Sun, [arXiv:2106.08002](#), Phys. Rev. B 106, 024503 (2022).
17. *Emergent Potts Order in a Coupled Hexatic-Nematic XY model*, Victor Drouin-Touchette, Peter P. Orth, Piers Coleman, Premala Chandra, Tom C. Lubensky, [arXiv:2103.01878](#), Phys. Rev. X 12 011043 (2022).
18. *Luttinger sum rules and spin fractionalization in the $SU(N)$ Kondo Lattice*, Tamaghna Hazra, Piers Coleman, [arXiv:2103.00346](#), Phys. Rev. Research 3, 033284 (2021).
19. *Emergent moments in a Hund's impurity*, Victor Drouin-Touchette, Elio J. König, Yashar Komijani, Piers Coleman, [arXiv:2101.10332](#) Phys. Rev. B 103, 205147 (2021).
20. *Quantum Annealed Criticality: A Scaling Description*, Premala Chandra, Piers Coleman, Mucio A. Continentino, Gilbert G. Lonzarich, [arXiv:2012.01601](#), Physical Review Research 2, 043440 (2020).

21. *Spin magnetometry as a probe of stripe superconductivity in twisted bilayer graphene* , Elio, J. Koenig, Piers Coleman and A. M. Tsvelik, [arXiv:2006.10684](#), Phys. Rev. B 102, 104514 (2020).
22. *Philip W. Anderson (1923-2020). Nobel winner who transformed condensed-matter and particle physics.* Piers Coleman, Nature, **581**, 29 (2020).
23. *Frustrated Kondo impurity triangle: A simple model of deconfinement* ,Elio J. Koenig, Piers Coleman, Yashar Komijani, [arXiv:2002.12338](#), Phys. Rev. **B 104**, 115103 (2021)).
24. *Soluble limit and criticality of fermions in Z_2 gauge theories*, Elio J. Koenig, Piers Coleman, Alexei M. Tsvelik,[arXiv:1912.11106](#), Phys. Rev. B **102**, 155143 (2019).
25. *Large-N Approach to the Two-Channel Kondo Lattice* , Ari Wugalter, Yashar Komijani, Piers Coleman, Phys. Rev. B 101, 075133 (2020).
26. *The Triplet Resonating Valence Bond State and Superconductivity in Hund's Metals*, Piers Coleman, Yashar Komijani, Elio J. König, [arXiv:1910.03168](#), Phys. Rev. Lett. 125, 077001 (2020).
27. *Strange metal behavior in a pure ferromagnetic Kondo lattice* Bin Shen, Yongjun Zhang, Yashar Komijani, Michael Nicklas, Robert Borth, An Wang, Ye Chen, Zhiyong Nie, Rui Li, Xin Lu, Hanoh Lee, Michael Smidman, Frank Steglich, Piers Coleman, Huiqiu Yuan, Nature 579, 51-55 (2020).
28. *Energy Scales of the Doped Anderson Lattice Model*, Hanhim Kang, Kristjan Haule, Gabriel Kotliar, Piers Coleman, Ji Hoon Shim, Phys. Rev. **B 99**, 165115 (2019).
29. *Crystalline Symmetry Protected helical Majorana modes in the iron-based superconductors*, Elio J. König, Piers Coleman, Phys. Rev. Lett **122**, 207001 (2019).
30. *Emergence and Reductionism: an awkward Baconian alliance*, Piers Coleman, in The Routledge Handbook on Emergence, editors Sophie Gibb, Robin Findlay Hendry and Tom Lancaster, pp 298-314, Routledge Press (2019). [arXiv:1702.06884](#).
31. *Order Fractionalization*, Yashar Komijani, Anna Toth, Premala Chandra, Piers Coleman, [arXiv:1811.11115](#) (2018).
32. *Emergent Charge Fluctuations at the Kondo Breakdown of Heavy Fermions*,Yashar Komijani, Piers Coleman, Phys. Rev. Lett. **122**, 217001 (2019).
33. *Intertwined Superfluid and Density Wave Order in a p -Orbital Superfluid with S^5 Manifold*, Simon Lieu, Andrew F. Ho, Derek K. K. Lee and Piers Coleman, Rev. **B 99**, 014504 (2019).
34. *David Pines (1924-2018) Physicist who described how electrons interact*, Piers Coleman and Laura Greene, Nature **560** , 432 (2018).

35. *The Coulomb problem in iron based superconductors*, Elio J. König and Piers Coleman, [arXiv:1802.10580](#), Phys. Rev. **B 99**, 144522 (2019) (2018).
36. *Renormalization group analysis for the quasi-1D superconductor BaFe_2S_3* , Elio J. König, Alexei M. Tsvelik and Piers Coleman, Phys. Rev **B 98**, 184517 (2018).
37. *Parity-violating hybridization in heavy Weyl semimetals* Po-Yao Chang, Piers Coleman, Phys. Rev. **B 97**, 155134 (2018).
38. *Model for Ferromagnetic Quantum Critical Point in a 1D Kondo Lattice* Yashar Komijani, Piers Coleman, Phys. Rev. Lett **120**, 157206 (2018).
39. *Implications of the Measured Angular Anisotropy at the Hidden Order Transition of URu_2Si_2* , Premala Chandra, Piers Coleman, Rebecca Flint, Jennifer Trinh, Arthur P. Ramirez, [Physica B 536](#), 145-149 (2018).
40. *Skyrme insulators: insulators at the brink of superconductivity*, Omur Erten, Po-Yao Chang, Piers Coleman, Alexei M. Tsvelik, [Phys. Rev. Lett.](#), **119**, 057603 (2017).
41. *Intertwined superfluid and density wave order in two-dimensional 4-He*, J. Nyéki, A. Phillis, A. Ho, D Lee, P. Coleman, J. Parpia, Brian Cowan and John Saunders, [Nature Physics](#), **13**, 455–459 (2017).
42. *Thermodynamic Measurement of Angular Anisotropy at the Hidden Order Transition of URu_2Si_2* , Jennifer Trinh, Ekkes Bruck, Theo Siegrist, Rebecca Flint, Premala Chandra, Piers Coleman, Arthur P. Ramirez, Phys. Rev. Lett. **117**, 157201 (2016).
43. *Theory Perspective: SCES 2016*, Piers Coleman, Philosophical Magazine, **97**, 36, 3257-3543 (2017).
44. *Phil Anderson's Magnetic Ideas in Science*, Piers Coleman, in "PWA90: A Lifetime of Emergence", editors P. Chandra, P. Coleman, G. Kotliar, P. Ong, D. Stein and C. Yu, pp 187-213, World Scientific (2016).
45. *Majorana approach to the stochastic theory of lineshapes* Yashar Komijani, Piers Coleman, Phys. Rev. **B 94**, 085113 (2016).
46. *Möbius Kondo Insulators*, [arXiv:1603.03435](#), Po-Yao Chang, Onur Erten, Piers Coleman, Nature Physics in Press (2017).
47. *Giant isotropic Nernst effect in an anisotropic Kondo semimetal* Ulrike Stockert, Peije Sun, Niels Oeschler, Frank Steglich, Toshiro Takabatake, Piers Coleman, Silke Paschen, Phys. Rev. Lett, **117**, 216401 (2016).
48. *Kondo Breakdown and Quantum Oscillations in SmB_6* , Onur Erten, Pouyan Ghaemi and Piers Coleman, Phys. Rev. Lett. **116**, 046403 (2016).

49. *Heavy Fermions and the Kondo Lattice: a 21st Century Perspective*, (2015), arXiv 1509.05769, in *Many-Body Physics: From Kondo to Hubbard Modeling and Simulation* **5**, Ch. 1, Verlag des Forschungszentrum Jülich, 2015 ISBN 978-3-95806-074-6.
50. *Supersymmetric approach to heavy fermion systems*, Aline Ramires and Piers Coleman, Phys. Rev. B **93**, 035120 (2016).
51. *Topological Kondo Insulators*, Maxim Dzero, Jing Xia, Victor Galitski and Piers Coleman, Annual Review of Condensed Matter Physics **7**:249-280 (2016).
52. *Entangled Orbital Triplets: hidden d-wave Cooper pairs of $s^\pm$ pairing*, T. Tzen Ong, Piers Coleman and Joerg Schmalian, Proc. Nat. Acad. Sci **113**, 5486-5491 (2016).
53. *Kondo Breakdown in Topological Kondo Insulators*, Victor Alexandrov, Piers Coleman and Onur Erten, Phys. Rev. Lett., Phys. Rev. Lett. **114**, 177202 (2015).
54. *Hastatic Order in URu_2Si_2 : Hybridization with a Twist*, Premala Chandra, Piers Coleman and Rebecca Flint, Phys. Rev. **B 91**, 205103 (2015).
55. *Emergent Powerlaw Phase in the 2D Heisenberg Windmill Antiferromagnet: a Computational Study*, Bhilahar Jeevanesan, Premala Chandra, Piers Coleman and Peter P. Orth, Phys. Rev. Lett. **115**, 177201 (2015).
56. * *“Introduction to Many Body Physics”*, Piers Coleman, Cambridge University Press, ISBN: 9780521864886, (2015).
57. *Spins, electrons and broken symmetries: realizations of two channel Kondo physics*, Rebecca Flint, Piers Coleman, Comptes Rendus Physique, **15**, 557-562 (2014).
58. *Ising Quasiparticles and Hidden Order in URu_2Si_2* , Premala Chandra, Piers Coleman, Rebecca Flint, Philosophical Magazine **94**, Issue 32-33, 3803-3819, (2014).
59. *End states in a 1-D topological Kondo insulator*, Victor Alexandrov, Piers Coleman, Phys. Rev. **B 90**, 115147 (2014).
60. *Hidden and Hastatic Orders in URu_2Si_2* . Rebecca Flint, Premala Chandra, Piers Coleman, Invited talk at SCES 2013 (Tokyo, Japan), J. Phys. Soc. Jpn. **83**, 061003 (2014).
61. *3He -R: A Topological $s^\pm$ Superfluid with Triplet Pairing*, T.Tzen Ong, Piers Coleman, Phys. Rev. **B 90**, 174506 (2014).
62. *Fully Gapped Superconductivity in Yb doped $CeCoIn_5$* , Onur Erten, Rebecca Flint and Piers Coleman, Phys. Rev. Lett. **114**, 027002 (2014).
63. *“Emergent criticality and Friedan scaling in a two-dimensional frustrated Heisenberg antiferromagnet”*, Peter P. Orth, Premala Chandra, Piers Coleman and Jörg Schmalian, Phys. Rev. **B 89**, 0934417, (2014).

64. “Theory for the Electron Spin Resonance mode of YbAlB_4 ” Aline Ramires and Piers Coleman, Phys. Rev. Lett. 112, 116405 (2014).
65. “Strange Metal without magnetic criticality”, T. Tomita, K. Kuga, Y. Uwatoko, P. Coleman and S. Nakatsuji, Science **349**, 506-509 (2015).
66. * “Cubic Topological Kondo Insulators” Victor Alexandrov, Maxim Dzero, and Piers Coleman Phys. Rev. Lett. 111, 226403 (2013).
67. “TAO pairing: a fully gapped pairing scenario for the iron-based superconductors”, T. Tzen Ong and Piers Coleman, Phys. Rev. Lett. 111, 217003 (2013).
68. “Quantum Physics: Time Crystals”, Piers Coleman, Nature **493**, 166-167 (2013).
69. “Origin of the Large Anisotropy in the χ_3 Anomaly in URu_2Si_2 ” Premala Chandra, Piers Coleman and Rebecca Flint, J. of Physics: Conference Series 449, 012026 (2013).
70. “Hastatic order: a theory for the hidden order in URu_2Si_2 ”, Premala Chandra, Piers Coleman and Rebecca Flint, Nature, 493, 621-626 (2013).
71. β - YbAlB_4 : a critical nodal metal, Aline Ramires, Piers Coleman, Andriy H. Nevidomskyy, A. M. Tsvelik, Phys. Rev. Lett. 109, 176404 (2012).
72. Emergent Critical Phase and Ricci Flow in a 2D Frustrated Heisenberg Model, Peter P. Orth, Premala Chandra, Piers Coleman, Joerg Schmalian, Phys. Rev. Lett. 109, 237205 (2012).
73. The symplectic- N t - J model and $s^\pm$ superconductors, Rebecca Flint and Piers Coleman, Physical Review B 86, 184508 (2012).
74. “ T/B scaling of magnetization in the mixed valent compound β - YbAlB_4 ”, Y. Matsumoto, S. Nakatsuji, K. Kuga, Y. Karaki, N. Horie, Y. Shimura, T. Sakakibara, A. H. Nevidomskyy and P. Coleman, proceedings SCES 2011, special conference issue of J. Phys. Cond. Matt, **391**, 012041 (2012).
75. “Basal-Plane Nonlinear Susceptibility: A Direct Probe of the Single-Ion Physics in URu_2Si_2 ” Rebecca Flint, Premala Chandra and Piers Coleman, Phys. Rev. **B 86**, 155155 (2012).
76. “Dimensions are critical” News and views, Nature materials, Nature Materials 11, 185-186, (2012).
77. “Spin and Holographic Metals”, Victor Alexandrov and Piers Coleman, Phys. Rev. **B 86**, 125145 (2012). (Editors suggestion).
78. “Local Quantum Criticality of an Iron-Pnictide Tetrahedron”, T. Tzen Ong, Piers Coleman, Phys. Rev. Lett. 108, 107201 (2012).

79. * ‘ *Theory of Topological Kondo Insulators*’ , Maxim Dzero, Kai Sun, Piers Coleman and Victor Galitski, *Phys. Rev. B* **85** , 045130-045140 (2012).
80. “ *Microscopy of the macroscopic*”, Piers Coleman, News and Views Article, *Nature* **474**, 290-291 (2011).
81. *Quasiparticle interference in an iron-based superconductor*, S. Sykora, Piers Coleman, *Phys. Rev. B* **84**, 054501 (2011).
82. *Composite pairing in a mixed valent two channel Anderson model* R. Flint, A. Nevidomskyy and Piers Coleman, *Phys. Rev. B* **84**, 064514 (2011).
83. * *Quantum Criticality without Tuning in the Mixed Valence Compound βYbAlB_4* Y. Matsumoto, S. Nakatsuji, K. Kuga, Y. Karaki, N. Horie, Y. Shimura, T. Sakakibara, A. H. Nevidomskyy, P. Coleman, *Science* **331**, 316 (2011).
84. “*Tandem Pairing in Heavy Fermion Superconductors*” Rebecca Flint, Piers Coleman, *Phys. Rev. Lett.*, **105**, 246404 (2010).
85. *Magnetization, Maxwell’s Relations and the Local Physics of the Dilute System $\text{Th}_{1-x}\text{U}_x\text{Ru}_2\text{Si}_2$* , Anna Toth, Premala Chandra, Piers Coleman, Gabriel Kotliar, Hiroshi Amitsuka, *Physical Review B* **82**, 235116 (2010).
86. “*Frustration and the Kondo effect in heavy fermion materials*” Piers Coleman, Andriy H. Nevidomskyy, *Journal of Low Temperature Physics* **161**, 182-202 (2010).
87. “*Evidence for a Non-Fermi-Liquid Phase in Ge-Substituted YbRh_2Si_2* ” J. Custers, P. Gegenwart, C. Geibel, F. Steglich, P. Coleman, S. Paschen, *Phys. Rev. Lett.* **104**, 186402 (2010).
88. * “ *Topological Kondo Insulators*”, Maxim Dzero, Kai Sun, Victor Galitski and Piers Coleman, *Phys. Rev. Lett.* **104**, 106408 (2010).
89. “*The Low Down on Heavy Fermions*”, Piers Coleman, *Science* **327**, 969 - 970 (2010).
90. “*Quantum Criticality and Novel Phases: A panel discussion*” Piers Coleman, *Physica Status Solidi B* **247**, 506 - 512 (2010).
91. “*Electron Cotunneling into a Kondo Lattice*” Marianna Maltseva, M. Dzero, P. Coleman *Phys. Rev. Lett.* **103**, 206402 (2009).
92. “*The Casimir Effect from a Condensed Matter Perspective*” L. Palova, P. Chandra, P. Coleman, *Am. J. Phys.* **77** 1055 (2009).
93. “*Heavy Electrons: The Gathering Storm of Data*”, P. Chandra and P. Coleman, *Nature Physics* **5**, 625 (2009).

94. *Quantum Critical Paraelectrics and the Casimir Effect in Time* L. Palova, P. Chandra, P. Coleman, *Phys. Rev. B* **79**, 075101 (2009).
95. “*Kondo resonance narrowing in d- and f-electron systems*” Andriy H. Nevidomskyy, P. Coleman, *Phys. Rev. Lett.* **103**, 147205 (2009).
96. “*Model for nodal quasiparticle scattering in a disordered vortex lattice*”, Marianna Maltseva, P. Coleman, *Phys. Rev. B* **80**, 144514 (2009).
97. *Coherence factors in a high-Tc cuprate probed by quasi-particle scattering*, T. Hanaguri, Y. Kohsaka, M. Ono, M. Maltseva, P. Coleman, I. Yamada, M. Azuma, M. Takano, K. Ohishi, H. Takagi, *Science* **323**, 923-926 (2009).
98. “*Symplectic N and time reversal in frustrated magnetism*”, Rebecca Flint and P. Coleman, *Physical Review B* **79**, 014424 (2009).
99. “*Layered Kondo Lattice model for quantum critical β -YbAlB₄*”, Andriy H. Nevidomskyy and P. Coleman, *Phys. Rev. Lett.* **102**, 077202 (2009).
100. “*Itinerant Ferromagnetism in an Atom Trap*.” Ilya Berndnikov, P. Coleman and S. Simon, *Physical Review B* **79**, 224403 (2009).
101. “*Observation of a multiferroic critical end point*”, Jae Wook Kim, S. Y. Haam, Y. S. Oh, S. Park, S.-W. Cheong, P. A. Sharma, M. Jaime, N. Harrison, Jung Hoon Han, Gun-Sang Jeon, P. Coleman and Kee Hoon Kim, *Proc. Nat. Acad. Sci.* **106**, 15573-15576 (2009).
102. “*Lending an iron hand to spintronics*”, P. Coleman, *Physics*, Jan 20th, 2009, <http://physics.aps.org/articles/v2/6>.
103. “*Heavy electrons and the symplectic symmetry of the electron spin*”, Rebecca Flint, M. Dzero, P. Coleman, *Nature Physics* **4**, 643 - 648 (2008).
104. *Quantum Critical Paraelectrics and the Casimir Effect in Time*, L. Pálóvá, P. Chandra and P. Coleman, *PRB* **79**, 075101 (2009).
105. *Angle dependent quasiparticle weights in correlated metals* Pouyan Ghaemi, T. Senthil, P. Coleman, *Phys. Rev. B* **77**, 245108 (2008).
106. *Frontier at your fingertips* P. Coleman, *Nature* **446**, 379 (22 Mar 2007).
107. *Sleuthing Hidden Order*, V. Tripathi, P. Chandra, P. Coleman, *Nature Physics* **3**, 78-80 (2007).
108. *Quantum criticality and the break-up of the Kondo pseudo-potential*, Eran Lebanon, P. Coleman, Invited talk at SCES 2007, Houston, Texas, *Physica B* **403**, 1194-1198 (2008).

109. *Superconductivity due to co-operative Kondo effect in Pu 115's*, M. Dzero, P. Coleman, Strongly Correlated Electrons, *Physica B* **403**, 955-957 (2008).
110. *Spectroscopic signatures of nonequilibrium pairing in atomic Fermi gases*, M. Dzero, E. A. Yuzbashyan, B. L. Altshuler, P. Coleman, Phys. Rev. Lett. **99**, 160402 (2007).
111. *Title: Conductance of a spin-1 quantum dot: the two-stage Kondo effect*, Anna Posazhennikova, Babak Bayani and P. Coleman, *Phys. Rev. B* **75**, 245329 (2007).
112. * *Heavy Fermions: electrons at the edge of magnetism*, P. Coleman, Handbook of Magnetism and Advanced Magnetic Materials, Edited by Helmut Kronmüller and Stuart Parkin. Vol 1: Fundamentals and Theory. John Wiley and Sons, 95-148 (2007).
113. *Fermi liquid identities for the Infinite U Anderson Model* Eran Lebanon, P. Coleman, *Phys. Rev. B* **76**, 085117 (2007).
114. *Conserving many body approach to the fully screened, infinite U Anderson model*, Eran Lebanon, Jerome Rech, P. Coleman, Olivier Parcollet, Phys. Rev. Lett. **97**, 106604 (2006).
115. *"Theory Perspective: SCES '05 Vienna"*, P. Coleman, *Physica B: Condensed Matter* **378-380**, 1160 (2006).
116. *"Schwinger Boson approach to the fully screened Kondo model.*, J. Rech, P. Coleman, O. Parcollet and G. Zarand, Phys. Rev. Lett. **96**, 016601 (2006).
117. *"Frustration can not preserve a Quasi-Two-Dimensional Spin Fluid"*, M. Maltseva and P. Coleman, *Phys. Rev. B* **72**, 174415-9 (2005).
118. *"Transport anomalies in a simplified model for a heavy electron quantum critical point"*, P. Coleman, A. Schofield and J. B. Marston, *Phys. Rev. B* **72**, 245111 (2005).
119. *"Sum Rules and Ward Identities in the Kondo Lattice"*, P. Coleman, I. Paul and J. Rech, *Phys. Rev. B* **72**, 094430 (2005).
120. *"Itinerancy and Hidden Order in URu2Si2"*, P. Chandra, P. Coleman and V. Tripathi, *J. Phys.: Condens. Matter* **17**, 5285 (2005).
121. *"Non equilibrium noise as a probe of the Kondo effect in mesoscopic wires"*, Eran Lebanon and P. Coleman, Phys. Rev. Lett. **95**, 046803 (2005).
122. * *"Quantum Criticality"* Piers Coleman and Andrew J. Schofield, Nature, "Einstein Centenary Edition", Nature vol 433, 226-229 (2005).
123. *"Anomalous conductance of a spin 1 quantum dot"*, A. Posazhennikova & P. Coleman, Phys. Rev. Lett. **94**, 036802 (2005)

124. “Singular Fermi Liquid fixed points in quantum impurity models”, Pankaj Mehta, L. Borda, Gergely Zarand, Natan Andrei, P. Coleman, *Phys. Rev. B* **72**, 014430 (2005).
125. * “Hall-effect evolution cross a heavy-fermion quantum critical point ”, S.Paschen, T. Lühmann, S. Wirth, P. Gegenwart, O. Trovarelli, Ch. Geibel, F. Steglich, P. Coleman and Q. Si, *Nature* **432**, 881 - 885 (2004).
126. “Frontiers in Correlated Matter”, P. Coleman, *MRS Bulletin* **29**, 968-970 (2004).
127. “Quantum replica approach to the under-screened Kondo model”. P. Coleman & I. Paul. *Phys. Rev. B* **70**, 1 (2004).
128. “Spin Dynamics from Majorana Fermions”, W. Mao, P. Coleman, C. Hooley and D. Langreth, *Phys. Rev. Lett.* **91**, 207203, (2003).
129. “Many Body Physics: Unfinished Revolution”, P. Coleman, *Ann Henri Poincare* **4**, Suppl. 2, S559-S580 (2003)
130. “Non-Fermi liquid behavior in the Under-Screend Kondo model” P. Coleman and C. Pépin, *Physical Review B* **68**, 220405 (2003) RC.
131. *The Case for Phase Separation in URu₂Si₂*, P. Chandra, P. Coleman, J.A. Mydosh, V. Tripathi, *J. Phys. Cond. Mat.* **15**, S1965-71 (2003).
132. * “Break up of the heavy electron at a quantum critical point” J. Custers, P. Gegenwart, H. Wilhelm, K. Neumaier, Y. Tokiwa, O. Trovarelli, C. Geibel, F. Steglich, C. Pépin and P. Coleman, *Nature* **424**, 524-527 (2003).
133. “Local moment physics in heavy electron systems” P. Coleman, in *Lectures on the Physics of Highly Correlated Electron Systems VI: Sixth Training Course*, edited by F. Mancini, American Institute of Physics, (2002).
134. “Breakdown of Fermi liquid theory in heavy fermion compounds” C. Pépin and P. Coleman, *Proceedings of LT23 Hiroshima* (2002) *Physica* (2003).
135. “Susy atomic model” J. Hopkinson and P. Coleman, *Proceedings of the SCES 2002 conference*, *Acta Physica Polonica B* **34**, 733 (2003).
136. “Heavy Electron Quantum Criticality” P.Coleman and C. Pépin, *Proceedings of the SCES 2002 conference*, Kraków, Poland, *Acta Physica Polonica B* **34**, 691-705, (2003).
137. *Hidden Order in URu₂Si₂: The Need for a Dual Description*, J. Mydosh, P. Chandra, P. Coleman and V. Tripathi, *Proceedings of the SCES 2002 conference Kraków, Poland*, (2002), *Acta Polonica* (2003).
138. *Quenched Disorder Formulation of the Pseudo-Gap Problem*, A. Posazhennikova and P. Coleman, *Phys. Rev. B* **67**, 165109-1-12, (2003).

139. “*LiV₂O₄: frustration induced heavy fermion metal*”, J. Hopkinson and P. Coleman, *Phys. Rev. Lett* **89**, 267201 (2002).
140. “*Atomic Model of Susy Hubbard Operators*”, J. Hopkinson and P. Coleman, *Phys. Rev.* **B 67**, 085110 (2003).
141. * “*Hidden Orbital Order in URu₂Si₂*”, P. Chandra, P. Coleman, J. Mydosh and V. Tripathi, *Nature* **417**, 831-834 (2002).
142. “*Oscillatory Instabilities in DC biased quantum Dots*” P. Coleman, C. Hooley, A. F. Ho, Y. Avishai and Y. Goldin, *J. Phys.: Condens. Matter* **14** L205-L211, (2002).
143. “*Two stage screening model of LiV₂O₄*” J. Hopkinson and P. Coleman, *Physica B* **312-313**, 711-713 (2002).
144. “*Pressure-Induced Magnetism and Hidden Order in URu₂Si₂*” P. Chandra and P. Coleman, *Physica B* **312-313**, 397-400, (2002).
145. “*Supersymmetric approach to the infinite U Hubbard Model*” P. Coleman and C. Pepin, *Physica B* **312-313**, 539-541 (2002).
146. “*What is the Fate of the heavy electron at a Quantum Critical Point?*”, P. Coleman, C. Pepin, *Physica B* **312-313**, 383-389 (2002).
147. “*Magnetic Spins that last For Ever*” P. Coleman, *Nature* **413**, 788-789, (2001).
148. * “*How do Fermi liquids get heavy, and die?*”, P. Coleman, C. Pepin, Q. Si and R. Ramazashvili, *J. Cond Matt* **13**, R723 (2001).
149. “*Two-channel Kondo Lattice Model on a ladder studied by the Density Matrix Renormalization Group Method*”, Juana Moreno, Shaojin Qin and P. Coleman, *Phys. Rev.* **B 64**, 085116 (2001).
150. “*Magnetic glue exposed*”, *Nature* **410**, 320-321, (2001)
151. “*Is the quantum dot at large bias a weak-coupling problem?*”, P. Coleman, C. Hooley and O. Parcollet, *Phys. Rev. Lett.* **86**, 4088 (2001).
152. “*Supersymmetric Hubbard Operators*” P. Coleman, C. Pépin and J. Hopkinson, *Phys. Rev.* **B 63**, 140411(R) (2001).
153. “*Strong coupling approach to the supersymmetric Kondo model*” P. Coleman, C. Pépin, A. M. Tsvelik, *Nuclear Physics B* **586**, 641-667, (2000).
154. “*Hidden Order in URu₂Si₂*” Nayana Shah, P. Chandra, P. Coleman and J.A. Mydosh, *Phys. Rev.* **B 61**, 564 (2000)

155. “Supersymmetric Spin Operators” P. Coleman, C. Pépin, A. M. Tsvelik, *Phys. Rev. B* **62**, 3852-3868 (2000).
156. * “Onset of magnetism in heavy fermion metals” A. Schroeder, G. Aeppli, R. Coldea, M. Adams, O. Stockert, H. von Lohneyson, E. Bucher, R. Ramazashvili and P. Coleman, *Nature* **407**, 351-355 (2000).
157. *Bound-State Instability of the Chiral Luttinger Liquid in One-Dimension.* A. F. Ho and P. Coleman, *Phys. Rev. B* **62**, 1688 (2000).
158. “Gap-anisotropic model for the narrow-gap Kondo insulators”, J. Moreno and P. Coleman, *Phys. Rev. Lett.* **84**, 342 (2000).
159. “Breakdown of the Chiral Luttinger Liquid in One-Dimension. ”, A. F. Ho and P. Coleman, *Physical Review Letters*, **83**, 1383 (1999).
160. “Theories of non-Fermi liquid behavior”, invited talk, P. Coleman, Proceedings of 1998 Strongly Correlated Electron Systems conference, Paris, *Physica B* **259-261**, 353 (1999).
161. “Co-operative Kondo Effect in the two-channel Kondo Lattice”, P. Coleman, A. M. Tsvelik, N. Andrei and H. Y. Kee, *Phys. Rev. B* **60**, 3608 (1999).
162. “Marginal Fermi Liquid in a Lattice of Three Body bound-states”, *Phys. Rev. B*, **58**, 4418 (1998).
163. * “Scaling of magnetic fluctuations near a quantum phase transition”, A. Schroder, G. Aeppli, E. Bucher, R. Ramazashvili, P. Coleman *Phys. Rev. Lett.*, *Physical Review Letters* **80**, 5623 (1998).
164. “Superconductors: Opening the gap”, P. Coleman, *Nature* **392**, 134 (1998).
165. “Local Moments in an Interacting Environment”, P. Coleman and A. M. Tsvelik, *Phys. Rev. B* **57**, 12757 (1998).
166. “Co-operative Two-Channel Kondo Effect”, P. Coleman, A. M. Tsvelik, N. Andrei and H. Y. Kee, *J. Physics : Cond. Matt Letters* **10**, L239-245, (1998).
167. “Superconducting Quantum Critical Point” Revaz Ramazashvili and Piers Coleman, *Phys. Rev. Letters* **79**, 3752 (1997).
168. “f-sum rule for the optical Hall angle” P. Coleman and D. Drew, *Phys. Rev. Letters* **78**, 1572 (1997).
169. *Reflections on the one-dimension realization of odd-frequency pairing* P. Coleman, A. Georges and A. M. Tsvelik, *J. Phys: Cond Matt* **79**, 345 (1997).

170. “How should we interpret the two transport relaxation times in the cuprates?” P. Coleman, A. J. Schofield and A. M. Tsvelik, *J. Physics (Cond Matt.)* **8**, 9985 (1996).
171. “Thermal Currents in Strongly Correlated Systems” J. Moreno and P. Coleman, [arXiv:cond-mat/9603079](#) (1996).
172. “Ultrasound attenuation in gap-anisotropic systems” J. Moreno and P. Coleman, *Phys. Rev B Rapid Comm*, **53**, R2995 (1996).
173. “Phenomenological Transport Equation for the Cuprate Superconductors” P. Coleman, A. Schofield and A. M. Tsvelik, *Phys. Rev. Lett* **76**, 1324 (1996).
174. “Condensed Matter Physics, the understated frontier”, P. Coleman, *Physics World Issue* **12**, 29 (1995).
175. “New Outlooks and Old Dreams in Quantum Antiferromagnets, ” P. Chandra and P. Coleman in *Strongly Interacting Fermions and High Temperature Superconductivity: Les Houches Lecture Notes (Session LVI)*, ed. B. Doucot and J. Zinn-Justin, 495-594, (North-Holland, 1995)
176. “Simple description of the anisotropic two-channel Kondo model” P. Coleman and A. Schofield, *Phys. Rev. Lett* **75**, 2184, (1995).
177. “Simple formulation of the two-channel Kondo model”, P. Coleman, L. Ioffe and A. M. Tsvelik, *Phys. Rev. B* **52**, 6611 (1995).
178. “Three Body bound-states and the development of odd frequency pairing” P. Coleman, E. Miranda and A. Tsvelik, *Phys. Rev. Lett.* **74**, 1654 (1995).
179. “Questions and Issues at SCES ’94”, **Conference Theory Summary Talk** P. Coleman, *Physica B* **210**, 191, (1995).
180. “Odd Frequency Pairing in Heavy Fermion Superconductors”, P. Coleman, E. Miranda and A. Tsvelik, *Physica B* **206**, 628, (1995).
181. “Finite-Temperature Transition into a Power Law Spin Phase with an Extensive Zero Point Entropy”, P. Chandra, P. Coleman and L. Ioffe, *Phys Rev. B* **49**, 12897, (1994).
182. “Non Linear Susceptibility as a probe of the Quadrupolar Kondo Effect”, A. Ramirez, P. Chandra, P. Coleman, Z. Fisk, J. L. Smith and H. Ott, *Phys. Rev. Lett.* **73**, 3018 (1994).
183. “Odd Frequency Pairing in the Kondo Lattice”, P. Coleman, E. Miranda and A. Tsvelik, *Phys. Rev. B.* **49**, 8955, (1994).
184. “Non Linear Susceptibility measurements in Heavy Fermion systems”, P. Chandra, A. Ramirez, P. Coleman, E. Brück, A. A. Menovsky, Z. Fisk, & E. Bücher *Physica B* **199-200**, 426 (1994).

185. “*Instabilities of the Abrikosov Suhl Resonance*”, P. Coleman, E. Miranda and A. Tsvelik, *Physica B*, **199-200**, 197(1994).
186. “*Gutzwiller-Jastrow wave functions for the $1/r$ Hubbard Model*”, D. F. Wang, Q. F. Zhong and P. Coleman, *Phys. Rev. B* **48**, 5502 (1993).
187. “*Spin Folding in The Two Dimensional Kagome Lattice Antiferromagnet*”, I. Ritchey, P. Coleman and P. Chandra, *Phys. Rev. Rapid Comm. B* **47**, 15342 (1993).
188. “*Possible Realization of Odd Frequency Pairing in Heavy Fermion Superconductors*”, E. Miranda, P. Coleman and A. Tsvelik, *Phys. Rev. Lett.* **70**, 2960 (1993).
189. “*Perturbative Approach to the Non-Fermi-Liquid Fixed Point of the Overscreened Kondo Problem*”, J. Gan, N. Andrei and P. Coleman, *Phys. Rev. Lett.* **70**, 686, (1993)
190. “*The anisotropic Kagome Antiferromagnet: a topological spin glass?*”, P. Chandra, P. Coleman and I. Ritchey, *Journal de Physique* **3**, 591 (1993).
191. “*Are Heavy Fermion Insulators Gapless ?*”, P. Coleman, E. Miranda and A. Tsvelik, *Physica B* **186-188**, 362 (1993).
192. “*Energy Spectrum of the One Dimensional Supersymmetric t -J model with Long Range hopping and Exchange*”, D. Feng, J. T. Liu and P. Coleman, *Phys. Rev. B* **46**, 6639 (1992)
193. “*Coexistence of Fermi Liquid and Magnetism in the Underscreened Kondo Model*”, J. Gan, P. Coleman and N. Andrei, *Phys. Rev. Lett.* **68**, 3476, (1992)
194. “*Non Linear Susceptibility as a Probe of Tensor Spin Order*”, A. Ramirez, P. Coleman, P. Chandra, A. Menovsky, E. Brück, Z. Fisk and E. Bücher, *Physical Review Letters*, **68**, 2680, (1992).
195. “*Heavy Fermion Physics: Physics on the Brink of Magnetism*”, P. Coleman, Second BCSPIN Summer School in Physics (Kathmandu, 1991), Editors J. Pati, Q. Shafi and Yu Lu, World Scientific, Vol **2**, 289 (1993).
196. “*Charge Kondo Effect in negative U Anderson Model*”, A. Taraphder and P. Coleman, *Physical Review Letters* **66**, 2814, (1991).
197. “*Spin Waves in Doped Mott Insulators*”, J. Gan, P. Coleman and N. Andrei, *J. Cond. Matt* **20**, 3396, (1991).
198. “*Micromagnetism in heavy Fermion Compounds*”, J. Gan and P. Coleman, *Physica B* **171**, 3 (1991).
199. *Magnets without moments: Spin nematics and beyond*, P. Chandra, P. Coleman and I. Ritchey, *Journal of Applied Physics* **69**, 4974-4978 (1991).

200. “*Triangular antiferromagnet as a biaxial quantum fluid*”, I. Ritchey and P. Coleman, Journal of Physics: Condensed Matter **2**, 46, 9227 (1990).
201. “*Quantum Spin Nematics: Moment Free Magnetism*”, P. Coleman and P. Chandra, Phys. Rev. Lett. **66**, 100 (1991).
202. “*Chiral Spin Fluctuations: Long versus short wavelength*”, I. Ritchey, P. Chandra and P. Coleman, Phys. Rev. Lett. **64**, 2583(1990).
203. * “*Quantum fluids approach to Frustrated Heisenberg Models*”, P. Chandra , P. Coleman & A. I. Larkin, Journal of Condensed Matter Physics, **2** 7933, (1990).
204. * “*Ising Transition in Frustrated Heisenberg Models*”, P. Chandra, P. Coleman and A. Larkin, Phys. Rev. Lett. **64**, 88 (1990).
205. “*Twisted Magnets & Twisted Superfluids*”, P. Coleman & P. Chandra, Int. J. Mod. Phys. **B 3**, 1729 (1989).
206. “*Some new perspectives on Quantum Antiferromagnets*”, “Wohlfarth Memorial Lecture”, J.M.M.M.**82**, 159 (1989).
207. * “*Kondo stabilized spin liquids and heavy fermion superconductivity*”, P. Coleman and N. Andrei, J. Phys. Cond. Matt. **C 1**, 4057-4080 (1989).
208. “*Cooper instability in the presence of a spin liquid*”, N. Andrei and P. Coleman, Phys. Rev. Lett. **62**, 595 (1989).
209. “*SU(2) spin liquids and heavy fermion superconductivity*, P. Coleman and N. Andrei, J.M.M.M. **66** & **67**, 504 (1988).
210. “*Dynamical Magnetic Fluctuations in Narrow Band Metals*”, P. Coleman and G. G. Lonzarich, Proc. Narrow Band Workshop, Staverden, Nederland, Ed. J. Fuggle (Plenum 1988), NATO ASI series Vol 184, 31-37 (1988).
211. “*Slave Boson Methods*”, P. Coleman, Proc. 1987 CAP/NSERC Summer Inst. in Theoretical Physics, Edmonton, Alberta (North Holland) Ed. F. C. Khanna, et. al. World Scientific, Vol I, 443 (1988).
212. “*Electron Transport in Mixed Valence and Heavy Fermion Metals*”, P. Coleman, Proc. 5th International Conference on Valence Fluctuations, Bangalore, 1987, Plenum, Eds. L. Gupta et al, 581-584 (1988).
213. “*Constrained Quasiparticles and conduction in heavy fermion systems*”, P. Coleman, Phys. Rev. Lett. **59**, 1026 (1987).

214. “*Fluctuations and Dissipation in the Kondo Lattice*”, P. Coleman, Proc. 5th International Conference on Actinides and Rare Earth Alloys, J. Magn. & Magn. Mat. **63 & 64**, 245 (1987).
215. * “*Mixed Valence as an Almost Broken Symmetry*”, P. Coleman, Phys. Rev. **B 35**, 5072-1186 (1987).
216. “*Diagonalization of Generalized Anderson Model*”, P. Coleman and N. Andrei, J. Phys. **C 19**, 3211 (1986).
217. “*Broken Symmetry, Heavy Band Formation and the Generalized Anderson Model*”, Proc. 5th International Conference on Crystalline Fields and Anomalous Mixing Effects, Sendai, Japan 1985, J. Mag. Mat **52**, 223 (1985).
218. “*Modelling Mixed Valence Using the Generalized Anderson Model*”, P. Coleman, Proc. 8th Taniguchi Symposium on Mixed Valence, Kashikojima, Japan 1985. (Springer Verlag) Ed. T. Kasuya, Springer Series in Solid State Physics, Vol. **62**, p.163 (1985).
219. “*Theory of Anomalous Hall effect in Mixed Valence Systems*”, P. Coleman, P.W. Anderson and T.V. Ramakrishnan, Phys. Rev. Lett. **55**, 414 (1985).
220. “*Anomalous Hall Effect in Kondo and Mixed Valence Systems*”, T.V. Ramakrishnan, P. Coleman and P.W. Anderson, Proc. 4th Int. Conf. on Valence Fluctuations, Cologne 1984, J. Magn. and Magn. Mat. **47 & 48**, 493 (1985). (Invited talk)
221. “*Large N as a Classical Limit of Mixed Valence*” , P. Coleman, Proc. 4th International Conference on Valence Fluctuations, Cologne 1984, J. Magn. and Magn. Mat. **47 & 48**, 323 (1985). (Invited talk)
222. * “*New Approach to the Mixed Valence Problem*”, P. Coleman, Phys. Rev. **B 29**, 3035 (1984).
223. “*Mixed Valence: a new formulation*”, P. Coleman, Proc. 1983 NATO Summer School in “Moment formation in Solids”, (Plenum 1985) Ed. W. Buyers, p.279.
224. * “*1/N Expansion for the Kondo Lattice*”, P. Coleman, Phys. Rev. **B 28**, 5255 (1983).

Invited and Plenary Talks , Seminars, Colloquiua etc. 2001-present

1. *Dark-Matter Challenges of the Solid State.*, Inaugural S. K. Joshi Memorial Lecture, Virtual, IIT Roorkie, Mar 21, (2022).
2. Kondo Insulators: Iconic forerunners of emergent quantum materials., Invited Talk, APS March Meeting, March 16th (2022).
3. Order Fractionalization in a Kitaev Kondo model, New Directions in Strong Correlation Physics, Aspen Center for Physics, Aspen, CO, January 24, (2022).
4. Order Fractionalization in a Kitaev Kondo model, Open Challenges in the Theory of Strongly Correlated Electron Systems, U. Minnesota, Minneapolis, MN, December 17, 2021.
5. Heavy Fermion Perspectives on Quantum Materials, Plenary Talk, SCES 2020 (postponed to 2021 virtual, Brazil), October 1, (2021).
6. Dark Matter Challenges of the Solid State, Colloquium at Universite de Chile, Virtual (Santiago, Chile) , September 10, 2021.
7. Order Fractionalization, Harvard CMSA Seminar, Virtual (Harvard, MA), August 11, 2021.
8. Strange Metallic Behavior in Ferromagnets, Theoretical and Experimental magnetism, Abingdon, UK, July 23, 2021.
9. Fractionalization and Kondo Insulators, Skye Workshop on Quantum Materials, 2021, Celtic College, Skye, UK, June 30, 2021.
10. Fractionalization in Heavy Fermion Materials, Conference on Novel Quantum Materials, 2021, Virtual(Stuttgart, Germany), June 10, 2021.
11. Does Hunds Coupling play a role in Iron Based Superconductivity: the Triplet Resonating Valence Bond proposal, Rice University Center for Quantum Matter Seminar, Virtual(Rice U, Houston, TX), May 5, 2021.
12. Atoms, Particles and Fractionalization, Trinity College Mathematical Society Talk, Virtual(Cambridge, UK), February 15, 2021.
13. The 115 Superconductors: Window on a new world of quantum materials (Invited talk), 20 years of the 115s: Past Present and Future, Virtual(Los Alamos, NM), November 10, 2020.
14. Triplet Resonating Valence Bond Theory of Superconductivity in Hunds Metals, Orsay Condensed Matter Physics Seminar, Virtual (Orsay, France), May 27, 2020.
15. Fractionalization and Kondo Insulators,Stanford University Condensed Matter Physics Seminar, Virtual (Stanford, CA), May 21, 2020.

16. Novel Quantum Phases and Order Fractionalization, QMS 2020, Yongpyong, South Korea, February 13, 2020.
17. Dark Matter Challenges of the Solid State, Higgs Chair Colloquium, Edinburgh University, UK, October 28, 2019.
18. Kondo Breakdown, Strange and Bad Metals, invited talk, Strongly Correlated Electron Systems (SCES) 2019, Okayama, Japan, September 25, 2019.
19. Kondo Breakdown and Strange Metallic Behavior at a Ferromagnetic Quantum Critical Point., Zhejiang conference on Quantum Materials, Zhejiang University, Hangjow, China, September 21, 2019.
20. Superconductivity in the Era of Entanglement (3 lectures), Cargese ICAM Summer School EPICUR 2019, Cargese, Corsica, France, August 12-14, 2019.
21. Kondo Breakdown and a possible connection with Strange and Bad Metals, Condensed Matter in the Cities, 2019, London, UK, July 4, 2019.
22. Kondo Breakdown and a possible connection with Strange and Bad Metals, Nanjing Conference on Quantum Materials , Nanjing, China, June 16, 2019.
23. Emergence and Reductionism: an Awkward Baconian Alliance, Amsterdam Meeting on Emergence, Amsterdam, Holland, May 11, 2019.
24. Observation of Charge Modes in a quantum critical metal, 39th Annual CNLS Conference: Strongly Correlated Quantum Materials, Santa Fe, New Mexico, May 1, 2019.
25. David Pines (1924-2018): Two Fluid Model of Heavy Fermions, David Pines Memorial Conference, Champaign-Urbana, Illinois, March 30, 2019.
26. Order Fractionalization, Invited Seminar, TIFR Mumbai. , TIFR, Mumbai, India, March 21, 2019.
27. Emergence and Reductionism: an Awkward Baconian Alliance, Annual Invited Talk, Meeting of Dutch Physical Society, Veldhoven, Holland, January 20, 2019.
28. “David Pines (1924-2018): Many Body Pioneer.”, Annual Meeting of ICAM, the Institute for Complex Adaptive Matter, Hsinchu, Taiwan, January 16, 2019.

2017 Oct	Paris Edge 2017, Invited Speaker,
2017 Oct	Columbia/Ecole Polytechnique FCMP, Lecture, Paris
2017 Sep	SUCCESS. School on UV and X-ray Spectroscopies, Les Houches, France. Lecture.
2017 Aug	Aspen Center for Physics, Blackboard talk
2017 July	SCES 2017, Prague, Plenary Lecture

2017 June	Condensed Matter in the City, London, Invited Talk
2017 June	Univ Paris Sud, Orsay, Seminar
2017 June	Incommensurate Order, Annecy, Invited Talk
2017 March	APS March Meeting, New Orleans, Invited Talk
2017 Feb	Quantum Criticality and Novel Phases, Berlin, Invited Talk
2017 Jan	Los Alamos National Lab, Seminar
2016 Oct	Wurzburg Condensed Matter School, Lecturer
2016 June	Condensed Matter in the City, London, Invited talk
2016 June	Engineering Quantum Matter, St Andrews, Invited Talk
2016 May	SCES 2016, Hangzhou, Plenary Summary
2016 April	Emergence Project, Durham UK, Invited Talk
2016 Mar	Simon Fraser University, Colloquium
2016 Mar	UBC Vancouver, Colloquium
2016 Mar	UBC Victoria, Colloquium
2016 Mar	Academica Sineca, Taipei, Seminar
2016 Mar	National Tsingua University, Hsinchu, Colloquium
2016 Mar	National Tsingua University, Hsinchu, Seminar
2015 Nov	Brookhaven National Lab, Seminar
2015 Nov	Incommensurate Order, Nagoya, Invited Speaker
2015 Sept	MIT, Seminar
2015 Sept	Julich Condensed Matter School, Julich, Lecturer
2015 Aug	ICTP, Trieste, Invited Talk
2015 Aug	ICAM School on CMP, Cargese, France, Invited Talk
2015 July	ICM Barcelona, Invited Talk
2015 July	Quantum Design, Dresden, Invited Talk
2015 July	TEMM, Abbingdon, UK, Invited Talk
2015-July	Concepts and Discovery in Quantum Matter, Cambridge, Invited talk
2015-June	Condensed Matter in the City, London, Invited Talk
2015-June	Strongly Correlated Topological Insulators, U. Michigan, Invited Talk and Tutorial
2015-May	Gordon Research Conference on Superconductivity, Hong Kong, Invited Talk
2015-Apr	Hangzhou School on SCES, Invited Talk
2015-Mar	MPICFS, Dresden, Seminar
2015-Mar	German DFG Meeting, Berlin, Invited Talk
2015-Mar	Frustration and Quantum Magnetism, New Delhi, India, Invited Talk
2014-Nov	MMM meeting, Hawaii, Invited Talk
2014-Sep	KITP conference on Iron Based Superconductors, Invited Talk
2014-Aug	ICTP, Trieste, Invited Talk
2014-Aug	Obergurgl, Austria, Invited Talk

2014-Jul Institute for Theoretical Physics, Natal, Invited Talk
 2014-Jul School for Condensed Matter Physics, Boulder, Lecture
 2014-May GRC meeting on Correlated Electrons, Mount Holyoake, Discussion Leader
 2014-May Review of Army Office for Research, Virginia
 2014-Mar Super-Pire, REIMEI workshop, Invited Talk
 2014-Mar APS March Meeting, Invited Talk
 2014-Mar Carnegie Mellon U, Colloquium
 2014-Mar Kent State U, Colloquium
 2014-Feb U. Kentucky, Colloquium
 2014-Jan Aspen Center for Physics, Invited Talk
 2014-Jan Nordita, Stockholm, Invited talk

2013 Nov Hidden order Conference, Leiden, Invited talk
 2013 Nov Georgetown U, Seminar
 2013 Nov Harvard U, Seminar
 2013 Sep QCET, Freudenstadt Germany, Invited Talk
 2013 Sep Higgs Center, Edinburgh, Topological quantum matter, invited talk
 2013 Aug Nordita, Stockholm, SC, the second Century“ Invited Talk
 2013 Aug SCES 2013, Semi plenary Invited Talk
 2013 Aug ICAM-China Summer School, Weihei, China 2 lectures
 2013 Jul Aspen Center for Physics, Blackboard talk
 2013 Jun Royal Holloway Univ. London, Seminar
 2013 May Los Alamos National Laboratory, Colloquium
 2013 May CBPF, Rio de Janeiro, Brazil, Colloquium
 2013 May Unicamp, Campinas, Brazil, Seminar
 2013 Apr ICAM FAPERJ School, Rio de Janeiro, 3 Lectures
 2013 Apr Kent University, Canterbury, UK, Colloquium
 2013 Mar KIT, Karlsruhe, Seminar
 2013 Mar AAAS Meeting, Boston, Invited Talk
 2013 Jan TU, Vienna, Seminar
 2013 Jan PSI, Zurich, Colloquium
 2013 Jan MANEP Winter Schook, Saas-Fe Switzerland, 3 Lectures

2012 Dec Johns Hopkins U, Seminar
 2012 Dec Ohio State U, Colloquium and Seminar
 2012 Nov Boston College, Boston, Condensed Matter Seminar
 2012 Oct IBM Almaden, Superconductivity 298K, invited talk
 2012 Oct KITP UC Santa Barbara, Workshop on Frustrated Magnetism, Invited talk
 2012 Aug Quantum Criticality and Novel Phases 12, Dresden, Invited Talk
 2012 Aug Department of Energy PI Meeting, Plenary talk

2012 Aug	ICTP Trieste, Italy, Invited Talk
2012 Jul	M2S Washington, Plenary Outreach Lecture
2012 Jul	U. South Carolina, 3 Lectures Summer School
2012 Jul	Aspen Center for Physics, Blackboard talk
2012 Jul	SCES 2012, Busan, Korea, Semi-Plenary Talk
2012 Jun	Oxford, Sir Rudolf Peierls Theory Centre, Colloquium
2012 Jun	Oxford, Clarendon Laboratory Colloquium
2013 Jun	U. Stuttgart, Colloquium
2012 Jun	Queen Mary College, London, Public Outreach Lecture
2012 Apr	UCL, London, Seminar
2012 Apr	Karlsruhe, Peter Wolfle FestSchrift, Invited Speaker
2012 Mar	Berlin, DPG Spring Meeting, Invited Lecturer
2012 Mar	Boston, APS March Meeting, Invited Speaker
2012 Feb	UCLA, Colloquium
2012 Jan	Argonne National Lab, Colloquium
2012 Jan	IOP, Beijing, China, invited speaker
2011 Oct	Univ Wuerzburg, School on Nanophysics, two lectures
2011 Sept	Princeton U, Invited Talk, PCTS Haldane 60th Birthday
2011 Sept	U.C. Davis, Colloquium, "Magnetism and Superconductivity: A new era of convergence."
2011 June	Colloq, MPIKS, Dresden "Magnetism and Superconductivity: A new era of convergence."
2011 July	Dialog on Physics, Aspen Colorado, "From the Quantum to the Micron"
2011 May	Royal Holloway, University of London, Colloquium
2011 May	International Institute for Theoretical Physics, Natal, Brazil, Invited Speaker
2011 May	Rutgers Stat Mech meet, Invited speaker
2011 Apr	Hangzhou, China Conference on Quantum Matter, Invited Speaker
2011 Feb	Lousianna State U, Invited Colloquium and Seminar
2010 Dec	Mysore India, ICTS School on Condensed Matter, Lecturer, Five Lectures.
2010 Dec	Lev Gor'kov Fest, NHMFL, Tallahassee Florida, Invited Speaker
2010 Nov	McMaster U, Canada, Seminar
2010 Oct	CIFAR, Whistler, British Columbia, Canada, Invited Speaker
2010 Jul	Rutherford Lab, UK. Seminar
2010 Jun	SCES 2010, Santa Fe, NM. Invited Talk
2010 Jun	ICAM/FAPERJ Summer School, Rio de Janeiro, Brazil. Three lectures
2010 Apr	U. Maryland, Colloquium.
2010 Mar	APS March Meeting, Portland Oregon. Invited Talk
2010 Feb	ISSP Japan, Seminar.
2010 Feb	IIT Kanpur, India Invited Talk and Colloquium 50th Anniversary of IIT Kanpur

2009 Nov	Seminar, Riken, Tokyo Japan.
2009 Nov	Colloquium and seminar ISSP, Tokyo Japan.
2009 Oct	Seminar, Doniach Fest, Stanford
2009 Oct	Invited Talk, Hangzhou, China.
2009 Sept	Colloquium, U. Toronto, Canada.
2009 Aug	Panel discussion leader, QCNP workshop, Dresden, Germany
2009 July	Colloquium, ILL, Grenoble, France.
2009 July	Two lectures, Cargese Summer School, Cargese France.
2009 May	Seminar, Amherst College.
2009 April	Keynote Speaker, Perimeter Institute CMP workshop.
2008 April	Colloquium, Perimeter Institute, Waterloo, Canada
2009 April	Colloquium, U. Toronto, Canada
2009 Jan	Colloquium, Technical U. Vienna, Austria
2009 Jan	Colloquium, MPICFS, Dresden
2009 Jan	Invited Talk, Quantum Critical Phenomena in Superclean Materials, Hawaii
2008 Oct	Seminar, Brookhaven National Labs
2008 Oct	Colloquium, SUNY, Stony Brook
2008 Sept	Invited talk, PITP workshop on quantum criticality, Toronto
2008 Aug	Plenary Talk, SCES 2008, Buzios, Brazil
2008 July	Boulder Summer School, Three Lectures
2008 June	Colloquium, Max Planck Inst fur Complexer System, Dresden
2008 June	Seminar, Max Planck Inst fur Complexer System, Dresden
2008 April	Colloquium, Los Alamos National Lab, NM
2008 April	Colloquium, U Colorado, Bolder
2008 Mar	Seminar, Yale University
2008 Mar	Seminar, Unicamp, Campinas, Brazil
2008 Feb	Seminar, Boston U.
2008 Jan	Seminar, NYU
2008 Jan	Seminar, Royal Holloway, University London
2007 Dec	Invited talk, Hong Kong University
2007 Nov	Invited Talk, Santa Fe workshop on heavy fermions
2007 Oct	Seminar, Univ Texas, Austin
2007 Aug	Seminar, Aspen Center for Physics
2007 June	Seminar, St. Andrews University, Scotland
2007 June	Seminar, London Center for NanoTechnology
2007 June	Seminar, Landau Institute, Moscow
2007 May	Invited talk by Postdoc Eran Lebanon, Houston SCES 2008
2007 April	Colloquium, University of Illinois, Urbana
2007 April	Seminar, Johns Hopkins University

2007 Mar	Three lectures, CBPQ, Rio de Janeiro,
2007 Mar	Seminar, Unicamp, Campinas, Brazil
2007 Jan	Seminar, Budapest Technical University
2006 Nov	ACTP conference on correlated matter, Pohang, Korea. Invited Speaker.
2006 Oct	Harvard, Cambridge US. Seminar.
2006 Oct	Canadian Institute for Advanced Research, Vancouver, Canada. Invited Speaker.
2006 Sept	Florida State University, Tallahassee, Colloquium.
2006 Aug	Lorentz Institute, Leiden, NL. Invited Speaker.
2006 Jun	Lonzarich 60th Birthday Festschrift, Cambridge, UK. Invited Speaker .
2006 Jun	Rencontres Claudes Istzykson, Saclay, France. Invited Speaker.
2006 Apr	Colloquium, University of Florida, Gainesville.
2005 Oct	Invited Talk, Conference on Strongly correlated electrons, Hvar, Croatia.
2005 Aug	ICAM summer school lecturer, Cargese, Corsica, France
2005 Jul	Conference Summary, SCES 2005, Vienna, Austria
2005 Apr	Seminar, UCLA
2005 Mar	Seminar, UCL London.
2005 Jan	Directors Lunchtime Seminar, KITP, UCSB, Santa Barbara
2005 Jan	Colloquium, UC Irvine
2004 Dec	Seminar, Technical U. Budapest
2004 Nov	Colloquium, UIC, Chicago
2004 Oct	Colloquium, UNC Chapel Hill
2004 Jul	Invited speaker, CMD20, Prague
2004 Jul	Invited talk, ICTP Trieste, Italy
2004 May	Seminar, Inst. for Solid State, Budapest
2004 May	Invited talk, ICAM conference Cargese
2004 May	Colloquium, Argonne National Lab
2004 Feb	Seminar UC San Diego
2003 Nov	Seminar, NHMFL, Los Alamos
2003 Dec	Colloq, U. Penn
2003 Nov	Colloq Northwestern University
2003 Dec	Colloq, Temple U
2003 Jul	Physics Dialog, Aspen
2003 Jun	Seminar, Karlsruhe,
2003 Jun	Seminar, Max Planck, Dresden
2003 May	Ehrenfest Colloquium, Leiden.
2003 Jan	Seminar, U. College, London
2002 Dec	Colloquium, Jefferson Lab, Virginia

2002 Nov	Lecturer, Emergent Materials, Brazilia, Brazil
2002 Oct	Seminar, U. Michigan
2002 Sep	Invited Speaker Concepts in Strong Correlation 02, Hvar, Croatia
2002 Aug	Colloquium, UT Knoxville
2002 Jul	Invited Speaker, Th2002, Paris.
2002 Jul	Invited Speaker, Actinide Physics, Czech Republic
2002 Jul	Invited Speaker, ICM Poznan, Poland
2002 Jun	Visitor, UT Knoxville, / ORNL .
2002 Jun	Invited Speaker, musR 2000, Williamsburg
2002 May	ICAM lecturer, Los Alamos, NM
2002 Apr	Colloquium, Kent St. University
2002 Mar	Invited Speaker, APS March meeting, Indianapolis
2002 Jan	U. Toronto, Canada
2001 Dec	ISIS, Rutherford Lab, UK.
2001 Dec	LVSM , Katholeike U., Leuven, Colloquium.
2001 Dec	Max Planck Inst, Dresden, Seminar
2001 Oct	Board of Physics Meeting, National Science Council, Irvine Cal. Invited Speaker.
2001 Oct	High Fields Conference, Santa Fe, NM, Invited Speaker.
2001 Oct	Lecturer at 7th School of CMT, Vietri Sur Mare, Salerno.
2001 Sept	Seminar, NHMFL, Tallahassee, Fl.
2001 Aug	SCES 01, Ann Arbor, Invited Speaker
2001 May	SpHT, Saclay, Seminar.
2001 May	Festschrift Fur Frank Steglich, Schloss Ringberg, Germany, Invited Speaker
2001 Apr	SNS Conference, Chicago, Invited Speaker
2001 Mar	Boston College, Invited talk at workshop