

Dale Ian Pullin

Address:

Mailstop 105-50
California Institute of Technology
Pasadena, CA 91125, USA
Phone: (626)-395-6081
Email: dpullin@caltech.edu

UNIVERSITY EDUCATION

B.Sc. (Mathematics and Physics), University of Melbourne (1966)
B.E. (Aeronautical Engineering), University of Sydney (1969)
PhD (Aeronautics) Imperial College of Science and Technology (1974)

ACADEMIC/PROFESSIONAL POSTS

Scientific Officer, Low Speed Aerodynamics Division, Aeronautical Research Laboratories, Melbourne Australia (1969-70)
Postdoctoral Fellow, Department of Aeronautics, Imperial College (1975-76)
Lecturer, Department of Mechanical Engineering, University of Melbourne. (1976-81)
Senior Lecturer and Reader, Department of Mechanical Engineering, University of Queensland (1982-91)
Professor, California Institute of Technology (1991 - 2005). von Kármán Professor, (2006-2017). Robert H. Goddard Professor, (2017-)

RESEARCH INTERESTS

Theoretical and computational fluid mechanics; rarefied gas dynamics, vortex dynamics, nonlinear waves, compressible flow, shock-wave dynamics, hydrodynamic stability, turbulence and turbulent mixing, large-eddy simulation of turbulent flows, magnetohydrodynamics, numerical algorithms for computational fluid dynamics, Eulerian computational solid mechanics.

PROFESSIONAL MEMBERSHIPS

Fellow of the American Physical Society
Fellow of the Australasian Fluid Mechanics Society

GRADUATE STUDENTS (Ph.D)

Past:

Peter Jacobs, Robert Krek, Nigel Lott, Robert Mallett (university of Queensland), Kavan Ardalán, Ashish Misra, Keri Aivaziz, James Buntine, Shaun Shariff, Aurelius Prochazka, Mark Brady, Tobias Voelkl, Paul O’Gorman, Gerard O’ Reilly, Vincent Wheatley, James Faddy, Ivan Bermejo, Manuel Lombardini, Daniel Chung, Richard Kramer, Geoff Ward, Jack Ziegler, Yue Yang, Michio Inoue, Alejandro Lopez-Ortega, Namiko Saito, Dustin Summy, Noah Braun, Akshay Sridhar

Present:

Eric Shen, Ke Yu

PUBLICATIONS

Institutional Reports

1. Pullin, D.I., A method for calculating inviscid separated flows about conical slenderbodies, *Aeronautical Research Laboratories, Aerodynamics Report (Australia)*, (1973) 38 pages.
2. Pullin, D.I., Calculations of the steady conical flow about a yawed delta wing with leading edge separation, *Aeronautical Research Council Research and Memoranda* 3767, (1975), London : Her Majesty's Stationary Office. 47 pages.

Chapters of Books

1. Pullin, D.I., Harvey, J.K., and Bienkowski, G.K., Hypersonic leading edge flow of diatomic gas by the direct simulation method, in *Rarefied Gas Dynamics* **2**, (Ed Becker & Fiebig), Dfvlr-Press, Porz-Wahn, Germany, Chapter 5.,(1974)
2. Pullin, D.I., Davis, J., and Harvey, J.K. Monte Carlo calculations of the rarefied transition flow past a bluff faced cylinder, in *Progress in Astronautics and Aeronautics* , (Ed. Potter) **51** (1), 379-391, Am. Inst. Aeronautics and Astronautics, N.Y., (1977)
3. Pullin, D.I., and Grimshaw, R.H.J., Large amplitude interfacial solitary waves, in *Nonlinear Waves*, (Ed. Hokikawa, Mauro), Springer-Verlag, 221-231, (1988).
4. Moore, D.W., and Pullin, D.I., The vortex pair in a compressible ideal gas, in *Vortex Motion*, (Ed. Hasimoto, Kambe), North-Holland, Amsterdam, 337-341 (1988)
5. Pullin, D.I., On similarity flows containing two-branched vortex sheets, in *Mathematical Aspects of Vortex Dynamics*. (Ed. Caffisch), SIAM, 97-106 (1989)
6. Pullin, D.I., Saffman, P.G., Some developments of the Lundgren-Townsend model of turbulent fine scales, in *Unstable and turbulent motion of fluids*, (Ed. S. Kida) World-Scientific, 256-265 (1992).
7. Pullin, D.I., Saffman, P.G., Vortex models of the fine scales of turbulence, in *Small scale structure of turbulence in hydrodynamics and magnetohydrodynamics*, (Ed. M. Meneguzzi, A. Pouquet, A. Sulem) Springer-Verlag (New York), 61-74 (1995)
8. Pullin, D.I., Vortex tubes, spirals and the large-eddy simulation of turbulence, in *Tubes, sheets and singularities in fluid mechanics*, (Ed. K. Bajer, H.K. Moffatt) Kluwer, 171-180 (2003)
9. Faddy, J., and Pullin, D.I., Evolution of vortex structures in a model of aircraft trailing vortices. in *TubesElementary Vortices and Coherent Structures; Significance in Turbulence Dynamics*, 242-248, (Ed Kida), Kluwer, (2006).
10. Hill, D.J., Pantano, C. and Pullin, D.I., Large-eddy simulation of Richtmyer-Meshkov instability with reshock. in *Complex effects in large-eddy simulation*, 111-119 (Ed. S. Kassinos, P. Moin), Springer, (2007)
11. Pantano, C., Deiterding, R., Hill, D.J. Pullin, D.I. A low-numerical dissipation, patch-based adaptive-mesh-refinement method for large-eddy simulation of compressible flows in *Complex effects in large-eddy simulation*, 251-260 (Ed. S. Kassinos, P. Moin), Springer, (2007)
12. Lombardini, M., Deiterding, R., and Pullin, D.I., Large Eddy Simulations of the Richtmyer-Meshkov Instability in a Converging Geometry. in *Quality and Reliability of Large-Eddy Simulations*, Book Series: ERCOFTAC SERIES (EUROPEAN RESEARCH COMMUNITY ON FLOW, TURBULENCE AND COMBUSTION), Ed. .Meyers, J., Geurts, B.J. Sagaut, P. **12**, (2008)
13. Pullin, D.I. and Meiron D.I., "Philip G. Saffman", in *A voyage through turbulence*, 393-425 (Ed. P. A. Davidson, Y. Kaneda, H.K. Moffatt, K. R. Sreenivassan), CUP, (2011)

Papers in Journals

1. Pullin D.I. and Harvey, J.K., A numerical simulation of the rarefied flat plate problem, *J. Fluid Mech.*, **78**, 689-707 (1976)
2. Pullin D.I. and Harvey, J.K., Direct simulation calculations of the rarefied flow past a forward facing step, *AIAA J.*, **15**, 124-126, (1977)
3. Pullin, D.I., Kinetic models for polyatomic molecules with phenomenological energy exchange, *Phys. Fluids*, **21**, 209-216, (1977)
4. Pullin, D.I., The large-scale structure of self-similar rolled up vortex sheets, *J. Fluid Mech.*, **88**, 401-430, (1978)
5. Pullin, D.I., Vortex ring formation at tube and orifice openings, *Phys. Fluids*, **22**, 401-403, (1979)
6. Pullin, D.I., Particle simulation methods for equilibrium fluid flow, *J. Comp. Phys.*, **34**, 231-244, (1980)
7. Pullin, D.I., Generation of normal variates with given mean and standard deviation, *J. Statist. Comput. Simult.*, **9**, 303-310, (1979)
8. Pullin, D.I., and Perry, A.E., Some flow visualization experiments on the starting vortex, *J. Fluid Mech.*, **97**, 239-255 (1980)
9. Pullin, D.I., and Phillips, W.R.C., On a generalization of Kaden's problem, *J. Fluid Mech.*, **104**, 45-53, (1981)
10. Pullin, D.I., The nonlinear behaviour of a vortical layer at a wall, *J. Fluid Mech.*, **108**, 401-421, (1981)
11. Pullin, D.I., Numerical studies of surface-tension effects in non-linear Kelvin-Helmholtz and Rayleigh-Taylor instability, *J. Fluid Mech.*, **119**, 507-532, (1982)
12. Pullin, D.I., and Grimshaw, R.H.J., Nonlinear interfacial progressive waves near a boundary in a Boussinesq fluid, *Phys. Fluids*, **26**, 897-905, (1983)
13. Pullin, D.I., and Grimshaw, R.H.J., Interfacial progressive waves in a two-layer shear flow, *Phys. Fluids*, **26**, 1731-1739, (1983)
14. Pullin, D.I., and Joubert, P.N., Behaviour of a converging channel breakwater, theory and experiment, *J. Fluid Mech.*, **141**, 139-157, (1984)
15. Pullin, D.I., A constant vorticity Riabouchinsky free-streamline flow, *Q. Jour. Appl. Math.*, **37**, 619-631, (1984)
16. Pullin, D.I., and Simmons, J.M., Stability of the thin-jet model of the unsteady jet flap, *AIAA J.*, **23**, 1118-1121, (1985)
17. Grimshaw, R.H.J., and Pullin, D.I., Stability of finite amplitude waves, part 1 : modulational instability for small amplitude waves, *J. Fluid Mech.*, **160**, 297-315, (1985)
18. Pullin, D.I. and Grimshaw, R.H.J., Stability of finite amplitude interfacial waves, part 2 : numerical results, *J. Fluid Mech.*, **160**, 317-336, (1985)
19. Jacobs, P.A., and Pullin, D.I., Coalescence of stretching vortices, *Phys. Fluids*, **28**, 1619-1625 (1985)
20. Pullin, D.I., and Jacobs, P.A., Nonlinear waves in a shear flow with a vorticity discontinuity, *Stud. Appl. Math.*, **75**, 77-93, (1986)
21. Pullin, D.I., and Jacobs, P.A., Evolution of stretching vortex arrays, *J. Fluid Mech.*, **171**, 377-406, (1986)

22. Pullin, D.I., and Grimshaw, R.H.J., Stability of finite amplitude interfacial waves: part 3, effect of shear, *J. Fluid Mech.*, **172**, 277-306, (1986)
23. Grimshaw, R.H.J., and Pullin, D.I., Extreme interfacial waves, *Phys. Fluids*, **29**, 2802-2807, (1986)
24. Moore, D.W., and Pullin, D.I., The compressible vortex pair, *J. Fluid Mech.* **185**, 171-204, (1987)
25. Lott, N.J., and Pullin, D.I., Methods for fairing B-spline surfaces, *Comp. Aided Des.*, **20**, 597-604 (1988)
26. Pullin, D.I. and Grimshaw R.H.J., Finite amplitude solitary waves at the interface between two homogeneous fluids, *Phys. Fluids*, **31**, 3350-3360, (1988)
27. Jacobs, P.A., and Pullin, D.I., Multiple-contour-dynamic simulation of eddy scales in the plane shear layer, *J. Fluid Mech.*, **199**, 89-124, (1989)
28. Buntine and Pullin, D.I., Merger and cancellation of strained vortices, *J. Fluid Mech.*, **205**, 263-295, (1989)
29. Pullin, D.I. Jacobs, P.A., Grimshaw, R.H.J., and Saffman, P.G., Instability and filamentation of finite amplitude waves on vortex layers of finite thickness, *J. Fluid Mech.*, **209**, 359-384, (1989)
30. Pullin, D.I., and Moore, D.W., Remark on a result of D. Dritschel, *Phys. Fluids A*, **2**, 1039-1041 (1990)
31. Moore, D.W., and Pullin, D.I., The effect of heat addition on slightly compressible flow; the example of vortex pair motion. *Phys. Fluids A*, **3**, 1907-1914 (1991)
32. Pullin, D.I., and Saffman, P.G., Symplectic integration of Hamiltonian systems; the case of four-vortex motion., *Proc. R. Soc. Lond.*, A **432**, 481-494 (1991)
33. Mann, A.P., Pullin, D.I., Macrossan, M.N. and Page, N.W. Numerical modelling of dynamic powder compaction using the Kawakita equation of state. *J. Appl. Phys.* **70**, 3281-3296, (1991)
34. Pullin, D.I. Contour dynamics methods, *Ann. Rev. Fluid Mech.*, **24**, 89-115 (1992)
35. Pullin, D.I., and Saffman, P.G., On the Lundgren-Townsend model of turbulent fine scales., *Phys Fluids*, A **5**, 126-145 (1993)
36. Saffman, P.G. and Pullin, D.I., Anisotropy of the Lundgren-Townsend model of turbulent fine scales, *Phys. Fluids*, **6**, 802-807 (1994).
37. Pullin, D.I., and Saffman, P.G. Reynolds stresses and one-dimensional spectra for a vortex model of homogeneous anisotropic turbulence, *Phys. Fluids*, **6**, 1787-1796 (1994)
38. Macrossan, M.N. and Pullin D.I. A computational investigation of inviscid hypervelocity flow of a dissociating gas past a cone at incidence, *J. Fluid Mech.*, **266**, 69-92 (1994)
39. Nadiga, B.T. and Pullin D.I. A numerical method for near-equilibrium discrete-velocity gas flows, *J. Comp. Phys.*, **9**, 162-172 (1994)
40. Pullin, D.I., Buntine, J.D. and Saffman, P.G., On the spectrum of a stretched spiral vortex, *Phys. Fluids*, **6**, **3010-3027**, (1994)
41. Pullin, D.I. Pressure spectra for vortex models of fine-scale turbulence, *Phys. Fluids*, **7**, 849-856 (1995)
42. Prochazka, A., and Pullin, On the two-dimensional stability of the axisymmetric Burgers vortex, *Phys. Fluids*, **7**, 1788-1790 (1995)
43. Mallett, E.R. Pullin, D.I., and Macrossan, M.N. Numerical study of hypersonic leeward flow over a blunt-nosed delta wing. *AIAA J.*, **33**, 1626-1633 (1995)

44. Ardalan, K. Meiron D.I. and Pullin, D.I. Steady compressible flows- the hollow-core vortex array, *J. Fluid Mech.*, **301**, 1-17 (1995)
45. Moore, D.W., and Pullin, D.I., Inviscid separated flow over a non-slender delta wing, *J. Fluid Mech.*, **305**, 307-345 (1995)
46. Samtaney, R. and Pullin, D.I., Initial-value and self-similar solutions of the compressible Euler equations, *Phys. Fluids*, **10**, 2650-2655 (1996)
47. Saffman, P.G. and Pullin, D.I., Calculation of velocity structure functions for vortex models of turbulence, *Phys. Fluids*, **11**, 3072-3084 (1996).
48. Moschetta, J.M. and Pullin, D.I., A robust nondiffusive scheme for the Navier-Stokes/Euler equations, *J. Comp. Phys.*, **133**, 193-204 (1997)
49. Misra, A. and Pullin D.I. A vortex-based model for large-eddy simulation, *Phys. Fluids*, **11**, 2443-2454 (1997)
50. Pullin, D.I., and Saffman, P.G, Vortex dynamics in turbulence, *Ann. Rev. Fl. Mech.*, **30**, 31-51, (1998)
51. Prochazka, A., and Pullin D.I., Structure and stability of nonsymmetric Burgers vortices, *J. Fluid Mech.*, **363**, 199-228 (1998)
52. Moore, D.W., and Pullin, D.I., On steady compressible flows with compact vorticity; the compressible Hill's spherical vortex, *J. Fluid Mech.*, **374**, 285-303 (1998)
53. Brady. M., Leonard, A., and Pullin, D.I., Regularized vortex sheet motion in three dimensions, *J. Comp. Phys.*, **146**, (1998)
54. Samtaney, R. and Pullin D.I., Self-similar hypervelocity shock interactions with oblique contact discontinuities, *Shock Waves*, **8**, 299-310 (1998)
55. Brady M. and Pullin D.I. On singularity formation in three-dimensional vortex sheet evolution, *Phys. Fluids*, **11**, 3198-3200 (1999)
56. Meiron D.I., Moore D.W. and Pullin D.I. On steady compressible flows with compact vorticity; the compressible Stuart vortex., *J. Fluid Mech.*, **409**, 29-49 (2000)
57. Voelkl T., Pullin D.I. and Chan D.C. A physical-space version of the stretched-vortex subgrid-stress model for large-eddy simulation, *Phys. Fluids*, **12**, 1810-1825 (2000)
58. Pullin D.I. A vortex-based model for the subgrid flux of a passive scalar, *Phys. Fluids*, **12**, 2311-2319 (2000)
59. Samtaney R., Pullin, D.I. and Kosovic, B., Direct numerical simulation of decaying compressible turbulence and shocklet statistics, *Phys. Fluids*, **13**, 1415-1430 (2001)
60. Aivazis K.A. and Pullin D.I. On velocity structure functions and the spherical vortex model for isotropic turbulence, *Phys. Fluids*, **13**, 2019-2029 (2001)
61. Pullin, D.I. and Lundgren T.S. Axial motion and scalar transport in stretched spiral vortices, *Phys. Fluids*, **13**, 2553-2563 (2001)
62. Kosovic, B., Pullin, D.I. and Samtaney, R., Subgrid-scale modeling for large-eddy simulations of compressible turbulence, *Phys. Fluids*, **14**, 1511-1522 (2002)
63. Mandeville, B., Sargood, S., and Pullin, D.I., Optimising IP network performance through active measurement *Journal of the Communications Network*, **1**, Part 2, 6-13, (2002)
64. O'Gorman, P. and Pullin, D.I., The velocity-scalar cross spectrum of a stretched vortex, *Phys. Fluids*, **15**, 280-291 (2003)

65. Pantano, C. and Pullin, D.I., On the dynamics of collapse of a diffusion-flame hole, *J. Fluid Mech*, **480**, 311-322, (2003)
66. O'Reilly, G. and Pullin, D.I., Structure and stability of the compressible Stuart vortex, *J. Fluid Mech.*, **493**, 231-254 (2003)
67. Hill, D.J. and Pullin, D.I., Hybrid tuned center difference - WENO method for large-eddy simulations in the presence of strong shocks. *J. Comp. Phys.*, **194**, 435-450 (2004)
68. Gleeson, J.P. and Pullin, D.I., Flatness of tracer density profile produced by a point source in turbulence. *Physics of Fluids*, **15**, 3546-3557 (2003)
69. Pantano C. and Pullin, D.I., A statistical description of turbulent diffusion flame holes, *Combustion and Flame*, **137**, 295-305 (2004)
70. Pullin, D.I. and Wang ZJ, Unsteady forces on an accelerating plate and application to insect hovering flight, *J. Fluid Mech*, **509**, 1-21, (2004)
71. O'Gorman PA, and Pullin, D.I., On modal time correlations of turbulent velocity and scalar fields., *Journal of Turbulence*, **5**, Art. No. 035, (2004)
72. Wheatley, V., Pullin, D.I., and Samtaney, R., Regular shock refraction at an oblique planar density interface in magnetohydrodynamics, *J. Fluid Mech*, **522**, 179-214, (2005)
73. O'Reilly, G. K. and Pullin, D.I., Smooth transonic flow in an array of counter-rotating vortices, *J. Fluid Mech*, **524**, 1197-2006, (2005)
74. O'Gorman, P.A. and Pullin, D.I., Effect of Schmidt number on the velocity-scalar cospectrum in isotropic turbulence with a mean scalar field, *J. Fluid Mech*, **532**, 111-140, (2005)
75. Faddy, J.M. and Pullin, D.I., Flow structure in a model of aircraft trailing vortices. *J. Phys. Fluids*, **17**, Art. No. 085106 (2005)
76. Wheatley, V., Pullin, D.I. and Samtaney, R., Stability of an impulsively accelerated interface in magnetohydrodynamics, *Phys. Rev. Lett.*, **95**, Art. No. 125002, (2005)
77. Hill, D.J., Pantano., C. and Pullin, D.I., Large-eddy simulation and multi-scale modeling of Richtmyer-Meshkov instability with reshock. *J. Fluid Mech.* **555**, 29-61, (2006)
78. Ponchaut N, Hornung, H.G., Pullin, D.I. and Mouton, C. A., On imploding cylindrical and spherical shock waves in a perfect gas. *J. Fluid Mech.* **560**, 103-122, (2006)
79. Pantano, C., Deiterding, R., Hill, D.J. and Pullin, D.I., A low-numerical dissipation patch-based adaptive mesh refinement method for large-eddy simulation of compressible flows. *J. Comp. Phys.* **221**, 63-87 (2007).
80. Kramer, R., Pantano, C. and Pullin, DI. A class of energy stable, high-order finite difference interface schemes for adaptive mesh refinement of hyperbolic problems. *J Comp. Phys.*, **226**, 1458-1484, (2007)
81. Pantano, C., Pullin, D.I., Dimotakis, P.E. and Matheou, G., A Wall-function closure for large-eddy simulation of wall-bounded flows. *J Comp. Phys.*, **227**, 9271-9291, (2008)
82. Bermejo-Moreno, I. and Pullin, D.I., On the non-local geometry of turbulence. *J. Fluid Mech.* **603**, 101-135, (2008)
83. Hornung, H.G, Pullin, D.I and Ponchaut, N.F., On the question of universality of imploding shock waves., *Acta Mechanica*, **201**, 31-35, (2008).
84. Bermejo-Moreno, I., Pullin, D.I. and Horuiti, K., Geometry of enstrophy and dissipation, grid resolution effects and proximity issues in turbulence. *J. Fluid Mech.* **620** 121-166, (2009).

85. Goldsworthy, M. and Pullin, D.I., Mean-free path effects in shock implosion., Accepted for publication in *Phys. Fluids*. **21**, Article Number: 026101 (2009).
86. Lombardini, M. and Pullin, D.I., Startup process in the Richtmyer-Meshkov instability., *Phys. Fluids*, **21**, Article Number: 044104, (2009)
87. Chung, D. and Pullin, D.I., Large-eddy simulation and wall modeling of turbulent channel flow. *J. Fluid Mech.* **631**, 281-309, (2009).
88. Kramer, R., Pantano, C. and Pullin, D.I. Non-dissipative and energy-stable, high-order finite-difference interface schemes for 2-D patch-refined grids. *J. Comp. Phys.*, **228**, 5280-5297, (2009).
89. Lombardini, M. and Pullin, D.I., Small-amplitude perturbations in the three-dimensional cylindrical Richtmyer-Meshkov instability ., *Phys. Fluids*, **21** Article Number: 114103, (2009)
90. Wheatley V., Samtaney R., and Pullin D.I., The Richtmyer-Meshkov instability in magnetohydrodynamics, *Phys. Fluids*, **21**, Article Number: 082102, (2009)
91. Chung, D. and Pullin, D.I., Direct numerical simulation and large-eddy simulation of buoyancy-driven turbulence. *J. Fluid Mech.* **643**, 279–308 , (2010).
92. Kramer, R., Pullin, D.I., Meiron, D.I. and Pantano, C, Shock-resolved Navier-Stokes simulation of the Richtmyer-Meshkov instability startup at a light-heavy interface. *J. Fluid Mech.* **642**, 421-443, (2010).
93. Yang, Y., Pullin, D.I. and Bermejo-Moreno, I., Multi-scale geometric analysis of Lagrangian structures in isotropic turbulence. *J. Fluid Mech.* **654**, 233-270, (2010).
94. Yang, Y., Pullin, D.I. , On Lagrangian and vortex-surface fields for flows with Taylor–Green and Kida–Pelz initial conditions. *J. Fluid Mech.* **661**, 446-481, (2010).
95. Ortega-Lopez A., Hill, D., Pullin, D.I. and Meiron, D.I., Linearized Richtmyer-Meshkov flow analysis for impulsively accelerated incompressible solids. *Physical Review E.*, **81** , Article Number: 066305, (2010).
96. Ward, G.M. and Pullin, D.I., A hybrid, center-difference, limiter method for simulations of compressible multi-component flows with Mie-Grüneisen equation of state. *J. Comp. Phys.* **229**, 2999-3018, (2010).
97. Hill, D., Pullin, D.I., Meiron, D.I. and Ortiz, M., An Eulerian hybrid WENO centered-difference solver for elastic-plastic solids . *J. Comp Phys.* **229**, 9053-9072, (2010).
98. Yang, Y., Pullin, D.I., Geometric study of Lagrangian and Eulerian structures in turbulent channel flow. *J. Fluid Mech.* **674**, 67-92 (2011).
99. Lombardini, M., Hill, D.J., Pullin, D.I. and Meiron, D.I. Atwood ratio dependence of Richtmyer–Meshkov flows under under reshock conditions using large-eddy simulations., *J. Fluid Mech.* **670**, 439-480 (2011).
100. van Rees, W.M., Leonard, A., Pullin, D.I. and Koumoutsakos, P., A comparison of vortex and pseudo-spectral methods for the simulation of periodic vortical flows at high Reynolds numbers, *J. Comp Phys.* **230**, 294-2805, (2011).
101. Ward G. M., Pullin D. I., A study of planar Richtmyer-Meshkov instability in fluids with Mie-Grüneisen equations of state. *Phys. Fluids*, **23** Article Number: 076101, DOI: 10.1063/1.3607444 (2011)
102. Ziegler Jack L., Deiterding R.; Shepherd J. E. and Pullin, D.I., An adaptive high-order hybrid scheme for compressive, viscous flows with detailed chemistry. *J. Comp Phys.* **230**, 7598-7630, DOI: 10.1016/j.jcp.2011.06.016 (2011).

103. Yang Yue, Pullin D. I., Evolution of vortex-surface fields in viscous Taylor-Green and Kida-Pelz flows. *J. Fluid Mech.* **685**, 146-164, DOI: 10.1017/jfm.2011.287 (2011).
104. Inoue M., Pullin D. I., Large-eddy simulation of the zero-pressure-gradient turbulent boundary layer up to $Re_\theta = O(10^{12})$, *J. Fluid Mech.* **686**, 507-533, DOI: 10.1017/jfm.2011.342, (2011).
105. Lombardini M., Pullin D. I. and Meiron D. I., Transition to turbulence in shock-driven mixing: a Mach number study *J. Fluid Mech.* **690**, 203-226, DOI: 10.1017/jfm.2011.425 (2012).
106. Inoue, M., Mathis, R., Marusic, I., and Pullin, D.I., Inner-layer intensities for the flat-plate turbulent boundary layer combining a predictive wall-model with LES. *Physics of Fluids*. **24**, Issue: 7, Article Number: 075102, (2012)
107. Saito, N., Pullin, D.I., and Inoue, M., Large-eddy simulation of smooth-wall, transitional and fully rough-wall channel flow., *Physics of Fluids*. **24**, Issue: 7 Article Number: 075103, (2012)
108. Pullin, D.I., and Meiron D.I., "P.G. Saffman", *Ann. Rev. Fluid Mech.*, **45**, 19-34 (2013)
109. Pullin, D.I., Inoue, M., and Saito, N., On the asymptotic state of high Reynolds number, smooth-wall turbulent flows. *Physics of Fluids*. **25**, Issue: 1, Article Number: 015116, DOI: 10.1063/1.4774335, (2013)
110. Inoue, M., Pullin, D.I., Harun, Z., and Marusic, I., LES of the adverse-pressure gradient turbulent boundary layer, *International Journal of Heat and Fluid Flow*, **44**, 293-300 (2013)
111. Barton, P.T., Deiterding, R., Meiron, D.I. and Pullin, D.I. Eulerian adaptive finite-difference method for high-velocity impact and penetration problems, *J. Comp. Physics*, **240**, 76-99, DOI: 10.1016/j.jcp.2013.01.013, (2013)
112. Ortega, A. Lopez, Lombardini, M., Pullin, D.I., and Meiron, D.I., Numerical simulation of elastic-plastic solid mechanics using an Eulerian stretch tensor approach and HLLD Riemann solver. *J. Comp. Physics*, **257**, 414-44, DOI: 10.1016/j.jcp.2013.10.007, (2014)
113. Ortega, A. Lopez, Lombardini, M., Pullin, D.I., and Meiron, D.I., Numerical simulations of the Richtmyer-Meshkov instability in solid-vacuum interfaces using calibrated plasticity laws. *Phys. Rev E*, **89**(3), Article Number: 033018 (2014)
114. Wheatley, V., Gehre, R.M., Samtaney, R. and Pullin, D.I. The Transverse Field Richtmyer-Meshkov Instability in Magnetohydrodynamics. *Physics of Fluids*. **26**(1) Article Number: 016102 (2014)
115. Lombardini M., Pullin D. I. and Meiron D. I., Turbulent mixing driven by spherical implosions. Part 1: Flow description and mixing-layer growth, *J. Fluid Mech.* **748**, 85-112 (2014)
116. Lombardini M., Pullin D. I. and Meiron D. I., Turbulent mixing driven by spherical implosions. Parts 2: Turbulence statistics, *J. Fluid Mech.* **748**, 113-142 (2014)
117. Saito, N. and Pullin, D.I., Large Eddy Simulation of smooth - rough - smooth transitions in turbulent channel flows, *International Journal of Heat and Mass Transfer*, **78**, 707-720 (2014)
118. Pullin, D.I., Mostert, W., Wheatley, V. and Samtaney, R. Converging cylindrical shocks in ideal Magnetohydrodynamics. *Physics of Fluids*. **26** Article Number: 097103 (2014)
119. Mostert, W., Wheatley, V., Samtaney, R. and Pullin, D.I. Effects of seed magnetic fields on magnetohydrodynamic implosion structure and dynamics *Physics of Fluids*. **26** Article Number: 126120 (2014)
120. Pullin, D.I. and Yang, Yue. Whither Vortex Tubes *Fluid Dynamics Research*. **26**, Article Number: 061418 (2014)

121. Milhaly, J.M., Tandy, J.D. Rosakis, A.J., Adams, M.A. and Pullin, D.I., Pressure-dependent, infrared emitting phenomenon in hypervelocity impact, *Journal of Applied mechanics*, **82**, Article 011004-2 (2015)
122. López Ortega, A., Lombardini, M., Pullin, D.I., Meiron, D.I. and Barton, P.T., Richtmyer Meshkov instability for elastic-plastic solids in converging geometries. *Journal of the Mechanics and Physics of Solids*. **76**, 291-394 (2015)
123. Mostert, W., Wheatley, V., Samtaney, R and Pullin, D.I. Effects of magnetic fields on magnetohydrodynamic cylindrical and spherical Richtmyer-Meshkov instability, *Phys. Fluids*. **27**. Article Number: 104102 (2015)
124. Cheng, W., Pullin, D.I. and Samtaney, R. Large-eddy simulation of separation and reattachment of a flat plate turbulent boundary layer, *J. Fluid Mech.* **785**, 78-108, (2015)
125. Mostert, W. Pullin D.I. and Samtaney, R. Converging cylindrical magnetohydrodynamic shock collapse onto a power-law current, *J. Fluid Mech.* **793**, 414-443, (2016)
126. Mostert, W. Pullin D.I., Samtaney, R. and Wheatley, V. Geometrical Shock dynamics for magnetohydrodynamic fast shocks. *J. Fluid Mech.* **811**, R2,1-11, (2017)
127. Mostert, W. Pullin D.I. and Wheatley, Magnetohydrodynamic implosion symmetry and suppression of Richtmyer-Meshkov instability in an octahedrally symmetric field. *Phy.Rev. Fluids*. **2**, (2017) Article Number: UNSP 013701, DOI: 10.1103/PhysRevFluids.2.013701
128. Cheng, W., Pullin, D.I, Samtaney, R. and Zhang, W., Large eddy simulation of flow over a cylinder with Re_D from 3.9×10^3 to 8.5×10^5 : a skin friction perspective. *J. Fluid Mech.* **820**, 121-158 (2017)
129. Bond, D., Wheatley, V., Samtaney, R., and Pullin D.I. Richtmyer-Meshkov instability of a thermal interface in a two-fluid plasma. *J. Fluid Mech.* **833**, 332-363 (2017)
130. Sridhar, A. ; Pullin, D. I. and Cheng, W. Rough-wall turbulent boundary layers with constant skin friction; *J. Fluid Mech.* **818**, 26-45 (2017)
131. Pullin, D. I. ; Hutchins, N. and Chung, D. Turbulent flow over a long flat plate with uniform roughness. *Phys. Rev. Fluids* **2**, Article Number: 082601 (2017), DOI: 10.1103/PhysRevFluids.2.082601
132. Cheng, W , Pullin, D.I. and Samtaney, R. Large-eddy simulation of flow over a grooved cylinder up to transcritical Reynolds numbers, *J. Fluid Mech.* **835**, 327-362 (2018), DOI: 10.1017/jfm.2017.767
133. Mostert, W., Pullin, D. I., Samtaney, R. and Wheatley, V. Singularity formation on perturbed planar shock waves. *J. Fluid Mech.* **846**, 536-562 (2018), DOI: 10.1017/jfm.2018.263
134. Braun, N. O., Pullin, D. I. and Meiron, D. I., Regularization method for large eddy simulations of shock-turbulence interactions, *J. Comp. Physics*, **361** ,231-246 (2018). DOI: 10.1016/j.jcp.2018.01.052
135. Mostert, W., Pullin, D., I ., Samtaney, R. and Wheatley, V Spontaneous singularity formation in converging cylindrical shock waves. *Phys. Rev. Fluids* **3**, Issue: 7, Article Number: 071401 (2018), DOI: 10.1103/PhysRevFluids.3.071401 ,
136. Summy, D. P. and Pullin, D. I., On the Five-Moment Hamburger Maximum Entropy Reconstruction *J. Statistical. Physics*, **172**, Issue: 3, 854-879, (2018), DOI: 10.1007/s10955-018-2034-9
137. Cheng, W., Pullin, D. I., and Samtaney, R. Large-eddy simulation of flow over a rotating cylinder: the lift crisis at $Re_D = 6 \times 10^4$. *J. Fluid Mech.* **855**, 371-407 (2018), DOI: 10.1017/jfm.2018.644
138. Braun, N. O. , Pullin, D. I. and Meiron, D. I. Large eddy simulation investigation of the canonical shock-turbulence interaction. *J. Fluid Mech.* **858**, 500-535 (2018), DOI: 10.1017/jfm.2018.766

139. Naijian Shen, Yuan Li, Pullin D.I. R. Samtaney, and Vincent Wheatley. On the magnetohydrodynamic limits of the ideal two-fluid plasma equations, *Physics of Plasmas*, 25, 122113 (2018); doi: 10.1063/1.5067387