

Daniel D. Joseph
Regents' Professor

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Birthdate and Place

March 26, 1929, Chicago, Illinois

Education

1950 M.A., Sociology	University of Chicago
1959 B.S., Mechanical Engineering	Illinois Institute of Technology
1960 M.S., Mechanics	Illinois Institute of Technology
1963 Ph.D., Mechanical Engineering	Illinois Institute of Technology

Employment

1962 Assistant Professor, Mechanical Engineering	Illinois Institute of Technology
1963 Assistant Professor, Aerospace Engineering and Mechanics	University of Minnesota
1965 Associate Professor, Aerospace Engineering and Mechanics	University of Minnesota
1968 Professor, Aerospace Engineering and Mechanics	University of Minnesota
1991-2001 Russell J. Penrose Professor of Aerospace Eng. & Mech.	University of Minnesota
1994 Regents' Professor	University of Minnesota

Visiting Positions

Visiting Professor of Mathematics, University of Sussex, Brighton, England, Summer & Fall 1973.
Visiting Professor of Applied Mathematics, Department of Mathematics, University of Melbourne, Australia, January 1975.
Visiting Professor of Mathematics, University of Nice and University of Naples, Fall 1976.
Visiting Scientist, Institut des Hautes Etudes, Bur-sur-Yvette, France, October–November 1980.
Visiting Professor of Mathematics, University of Paris and University of Nice, 1980–1981.
Visiting CNR Professor in Mathematical Physics, Naples, January, 1983.
Visiting Professor of Aeronautical Engineering, University of Rome, Fall 1985.
Visiting Professor of Applied Mathematics, Weizmann Institute, Rehovoth, Israel, December 1989–January 1990
Visiting Professor of Mathematics, University of Paris at Orsay, September–October 1990.

Honors and Awards

Guggenheim Fellow, 1969–70
National Academy of Engineering, 1990
G. I. Taylor Medalist, Society of Engineering Science, 1990
National Academy of Sciences, 1991

Distinguished Service Award, US Army CRDEC, 1992
G.I. Taylor Lecturer, Cambridge Phil. Soc., Jan 1992
Aris Phillips Lecturer, Yale University, April 1992
American Academy of Arts and Sciences, April 1993
Schlumberger Foundation Award, July 1993
Bingham Medalist of the Society of Rheology, October 1993
Fellow of the American Physical Society, November 1993
Timoshenko Medalist of the ASME, May 1995
Croco Lecturer, Princeton University, Mechanical Engineering, October 1995
Thomas Baron Fluid-Particle Systems Award of the AIChE and Shell. Nov. 1996
Illinois Institute of Technology Professional Achievement Award 1997
Kovaszny Lecturer, University of Houston, Mechanical Engineering, April 1999
Professional Achievement Citation of the University of Chicago, June 1999
Fluid Dynamics Prize of the APS, Nov 1999
Caribbean Congress off Fluid Dynamics Award, 2001
Listed in Thompson Scientific-ISI's Highly Cited Researchers™ 2002 at Thompson Scientific's www.ISIHighlyCited.com. Dan Joseph is one of only 32 professors at the University named as highly cited (Table is at the bottom). The only other engineer named in it is Ephraim Sparrow.
Honorary Symposium on Multi-Component and Multi-Phase Fluid Dynamics, in conjunction with the Fourteenth U. S. National Congress of Theoretical and Applied Mechanics, June 22-28, 2002, in Blacksburg, VA.
Ohanian Lecture Series, University of Florida, Mechanical Engineering, March 2003
Honorary Professor at Xi'an Jiaotong University, March 2004
Distinguished Speaker at the PIMS/Syncrude Lecture Series, June 4, 2004
Mechanical, Material & Aerospace Eng. Illinois Institute of Technology 2004 Alumni Recognition Award
Distinguished Adjunct Professor. University of California IRVINE, one month winters 2004, 2005-present

Patents

US Patent 4,602,502, Wave-speed meter, 1986, D.D. Joseph, O. Riccius. This device is to be used to measure wave speeds and to determine the effective rigidity of a liquid.
US Patent 4,644,782, Spinning rod interfacial tensiometer, 1987, D.D. Joseph. This device is used to determine the interfacial tension between immiscible liquids.
US Patent 5,150,607, Spinning drop tensioextensometer, 1992, D.D. Joseph, D.A Hultman. This device is used for polymer blends and in the oil industry where temperature is important.
US Patent 5,301,541, Drag determining apparatus, 1994, D.D. Joseph, F.J. Marentic, C.A. Nelson. Device and method for determining drag on surfaces.
US Patent 5,385,175, Conduit having hydrophilic and oleophobic inner surfaces for oil transportation, 1995, M. Rivero, V. Rodriquez, D.D. Joseph, E. Guevara, N. Carabano. Method for preventing fouling of pipe walls for lubricated transport.
US Patent 5,646,352, Method and apparatus for measuring a parameter of a multiphase flow, 1997, D.D. Joseph, R. Bai.
US Patent 5,922,190, Process for suppressing foam formation in a bubble column reactor, 1999, J. Guitian, D.D. Joseph, J. Krasuk.

US Patent 5,922,191, Foam control using a fluidized bed of particles, 1999, C. Mata, J. Guitian, D.D. Joseph, J. Krasuk.
US Patent 5,987,969, Apparatus and method for determining dynamic stability of emulsions, 1999, D.D. Joseph, G. McGrath, G. Nunez, P.J. Ortega.
US Patent 5,988,198, Process for pumping bitumen froth through a pipeline, 1999, O. Nieman, K. Sury, D.D. Joseph, R. Bai, C. Grant.

Consulting

Anisotropic etching of circuit boards: Psi Star, Hayward, CA, 1985
Interfacial tensiometer for polymer blending: Hoechst-Celanese, 1986–present
Acoustic waves in bread dough: Pillsbury Corp., 1987–1988
Water lubricated pipelining of viscous crudes: Shell-Houston, 1987–1990
M&M-Mars, Hackettstown, NJ, 1990–1991
Schlumberger-Doll, Ridgefield, CT, 1990
PDVSA, Intevep, Caracas, Venezuela, 1990–present
Proctor & Gamble, 1992
Dowell-Schlumberger, 1992-present
ICASE (NASA-LANGLEY) 1992-present
CRDEC (US ARMY) 1992-present
Gillette, 1993–present
InoMet, Inc., 1993
Syncrude Canada Ltd. 1995-1996
Teltech 1993-present

Editor

Associate Editor, *Archive for Rational Mechanics and Analysis*, 1967–1984
Associate Editor, *Journal of Applied Mechanics*, 1973–1976
Associate Editor, *SIAM Journal of Applied Mathematics*, 1976–1979
Associate Editor, *Journal for Society for Interaction of Mathematics and Mechanics*, 1979–1984
Associate Editor, *Journal of Non-Newtonian Fluid Mechanics*, 1985–present
Associate Editor, *Theoretical and Computational Fluid Mechanics*, 1989–1997
Associate Editor, *International Video Journal of Engineering Research*, 1990–1993
International Advisory Board, *European Journal of Mechanics B/Fluids*, 1990–1998
Associate Editor, *Intl. J. Bifurcation and Chaos in Applied Sciences & Engineering*, 1991–1993
Associate Editor, *International Journal of Multiphase Flow*, 1994–present
Associate Editor, *PanAmerican Mathematical Journal*, 1994–present
Editorial Board, Springer-Verlag series *Interdisciplinary Applied Mathematics*
Editorial Board, *J. Differential Equats. and Nonlinear Mechanics*, 2005-present

BOOKS

Books Edited:

Nonlinear Problems in Physical Science and Biology . Springer Lecture Notes in Mathematics (I. Stakgold, D.D. Joseph and D. Sattinger), 1973.
Nonlinear Dynamics and Turbulence (G. Barenblatt, G. Iooss and D.D. Joseph). Pitmann, 1983.

The Breadth and Depth of Continuum Mechanics (C.M. Dafermos, D.D. Joseph, F.M. Leslie, C. Truesdell, J. Serrin, and J.L. Ericksen), Springer, 1986.

Two Phase Flows and Waves (Daniel D. Joseph and David G. Schaeffer). Springer: IMA Volumes in Mathematics and its Applications, Volume 26, 1990.

Collected Papers of R.S. Rivlin (Grigori Isaakovich Barenblatt and Daniel D. Joseph). Springer, Volumes 1 and 2, 1997.

Books Written:

Stability of Fluid Motions I. Springer Tracts in Natural Philosophy, Vol. 27, 1976.

Stability of Fluid Motions II. Springer Tracts in Natural Philosophy, Vol. 28, 1976.

Elementary Stability and Bifurcation Theory (Gérard Iooss and Daniel D. Joseph). Springer-Verlag Undergraduate Textbook in Mathematics, 1980. Second edition, 1989.

Fluid Dynamics of Viscoelastic Liquids. Springer Applied Math Series, 1990.

Fundamentals of Two-Fluid Dynamics (Daniel D. Joseph and Yuriko Y. Renardy) Vol I: Mathematical Theory and Applications, Vol II: Lubricated Transport, Drops and Miscible Liquids, Springer Interdisciplinary Applied Mathematics Volumes 3 and 4 (1993, #201 below).

Interrogations of Direct Numerical Simulation of Solid-Liquid Flow, published by eFluids.com, <<http://www.efluids.com/books/joseph.htm>> (2002, #309 below).

Publications

1. L.N. Tao, D.D. Joseph, 1962. Fluid flow between porous rollers, *J. Applied Mech.*, **29**, 1-5.
2. D.D. Joseph, L.N. Tao, 1963. Transverse Velocity Components in Fully Developed Unsteady Flows, *J. Applied Mech.*, 147-148.
3. D.D. Joseph, 1964. Incompatibility of Beltrami Flow with Viscous Adherence, *Physics of Fluids*, **7**(5), 648-651.
4. D.D. Joseph, L.N. Tao, 1964. The Effect of Permeability on the Slow Motion of a Porous Sphere in a Viscous Liquid, *Zeitschrift AMM*, **44**(8), 361-364.
5. D.D. Joseph, 1964. Variable Viscosity Effects on the Flow and Stability of Flow in Channels and Pipes, *Physics of Fluids*, **7**(11), 1761-1771.
6. D.D. Joseph, 1965. Note on steady flow induced by rotation of a naturally permeable disc, *Quarterly J. Mech. Applied Math.*, **18**(3).
7. D.D. Joseph, 1965. On the stability of the Boussinesq equations, *ARMA*, **20**(1), 59-71.
8. D.D. Joseph, 1965. Stability of frictionally-heated flow, *Physics of Fluids*, **8**(12), 2195-2200.
9. D.D. Joseph, L.N. Tao, 1965. Unsteady Free and Forced Convection in Vertical Annular and Annular Sector Tubes, *Developments in Mechanics, Proceedings of the 8th Midwestern Mechanics Conference at Case Institute of Technology, April 1-3, 1963*, 403-404.
10. D.D. Joseph, 1965. Non-linear heat generation and stability of the temperature distribution in conducting solids, *Int. J. Heat Mass Transfer*, **8**, 281-288.
11. D.D. Joseph, L.N. Tao, 1965. Ground flow induced by a moving cylinder, *Physics of Fluids*, **8**(8), 1438.
12. C.C. Shir, D.D. Joseph, 1966. Lubrication of a porous bearing -- Reynolds' solution, *J. Applied Mech.*, **33**, 761-167.

13. D.D. Joseph, L.N. Tao, 1966. Lubrication of a porous bearing -- Stokes' solution, *J. Applied Mech.*, **33**, 753-761.
14. D.D. Joseph, 1966. Bounds on lambda for positive solutions of , *Quarterly J. Applied Math.*, **23**(4), 349-354.
15. D.D. Joseph, 1966. Nonlinear stability of the Boussinesq equations by the method of energy, *ARMA*, **22**(3), 163-184.
16. D.D. Joseph, C.C. Shir, 1966. Subcritical convective instability; Part 1, Fluid layers, *J. Fluid Mech.*, **26**(4), 753-768.
17. D.D. Joseph, S. Carmi, 1966. Subcritical convective instability; Part 2. Spherical shells, *J. Fluid Mech.*, **26**(4), 769-777.
18. T.S. Chen, D.D. Joseph, E.M. Sparrow, 1966. Evaluation of Tietjens function in stability calculations, *Physics of Fluids*, **9**(12), 2519-2520.
19. D.D. Joseph, 1967. Parameter and domain dependence of eigenvalues of elliptic partial differential equations, *ARMA*, **24**(5), 325-351.
20. D.D. Joseph, W.H. Warner, 1967. Parameter values excluded by existence conditions for buoyant dissipative motions in vertical channels, *Quarterly J. Applied Math.*, **25**(2), 163-173.
21. G.S. Beavers, D.D. Joseph, 1967. Boundary conditions at a naturally permeable wall, *J. Fluid Mech.*, **30**(1), 197-207.
22. C.C. Shir, D.D. Joseph, 1968. Convective instability in a temperature and concentration field, *ARMA*, **30**(1), 38-80.
23. J.E. Mott, D.D. Joseph, 1968. Stability of parallel flow between concentric cylinders, *Physics of Fluids*, **11**(10), 2065-2073.
24. D.D. Joseph, R.J. Goldstein, D.J. Graham, 1968. Subcritical instability and exchange of stability in a horizontal fluid layer, *Physics of Fluids*, **11**(4), 903-904.
25. D.D. Joseph, 1968. Eigenvalue bounds for the Orr-Sommerfeld equation, *J. Fluid Mech.*, **33**(3), 617-621.
26. P.C. Fife, D.D. Joseph, 1969. Existence of convective solutions of the generalized Benard problem which are analytic in their norm, *ARMA*, **33**(2), 116-138.
27. D.D. Joseph, 1969. Uniqueness criteria for the conduction-diffusion solution of the Boussinesq equations, *ARMA*, **35**(3), 169-177.
28. D.D. Joseph, S. Carmi, 1969. Stability of Poiseuille flow in pipes, annuli, and channels, *Quarterly J. Applied Math.*, **26**(4), 575-599.
29. D.D. Joseph, 1969. Eigenvalue bounds for the Orr-Sommerfeld equation; Part 2, *J. Fluid Mech.*, **36**(4), 721-734.
30. D.D. Joseph, E.M. Sparrow, 1970. Nonlinear diffusion induced by nonlinear sources, *Quarterly J. Applied Math.*, **28**, 327-342.
31. D.D. Joseph, 1970. Global stability of the conduction-diffusion solution, *ARMA*, **36**(4), 285-292.
32. T.S. Fu, D.D. Joseph, 1970. Linear instability of asymmetric flow in channels, *Physics of Fluids*, **13**(2), 217-221.
33. D.D. Joseph, B.R. Munson, 1970. Global stability of spiral flow, *J. Fluid Mech.*, **43**(3), 545-575.
34. D.D. Joseph, 1971. On the place of energy methods in a global theory of hydrodynamic stability, *Instability of Continuous Systems*, IUTAM Symposium September 1969, 132-142.

35. D.D. Joseph, W. Hung, 1971. Contributions to the nonlinear theory of stability of viscous flow in pipes and between rotating cylinders, *ARMA*, **44**(1), 1-22.
36. D.D. Joseph, 1971. Stability of convection in containers of arbitrary shape, *J. Fluid Mech.*, **47**(2), 257-282.
37. B.R. Munson, D.D. Joseph, 1971. Viscous incompressible flow between concentric rotating spheres; Part 1, Basic flow, *J. Fluid Mech.*, **49**(2), 289-303.
38. B.R. Munson, D.D. Joseph, 1971. Viscous incompressible flow between concentric rotating spheres; Part 2, Hydrodynamic stability, *J. Fluid Mech.*, **49**(2), 305-318.
39. D.D. Joseph, 1972. Energy stability of hydromagnetic flow, *Proceedings of Conference on Mathematical Topics in Stability Theory*, March 29-31, 1971 at Washington State Univ., 1-12.
40. D.D. Joseph, D.H. Sattinger, 1972. Bifurcating time periodic solutions and their stability, *ARMA*, **45**(2), 79-109.
41. W.L. Hung, D.D. Joseph, B.R. Munson, 1972. Global stability of spiral flow; Part 2, *J. Fluid Mech.*, **51**(3), 593-612.
42. F.H. Busse, D.D. Joseph, 1972. Bounds for heat transport in a porous layer, *J. Fluid Mech.*, **54**(3), 521-543.
43. D.D. Joseph, 1973. Remarks about bifurcation and stability of quasi-periodic solutions which bifurcate from periodic solutions of the Navier Stokes equations, *Nonlinear Problems in Physical Science and Engineering*, Joseph, Sattinger, Stakgold, eds., Springer Lecture Notes in Mathematics, 1-30.
44. D.D. Joseph, T.S. Lundgren, 1973. Quasilinear Dirichlet problems driven by positive sources, *ARMA*, **49**(4), 241-269.
45. D.D. Joseph, 1973. Domain perturbations: The higher order theory of infinitesimal water waves, *ARMA*, **51**(4), 295-303.
46. T.S. Chen, D.D. Joseph, 1973. Subcritical bifurcation of plane Poiseuille flow, *J. Fluid Mech.*, **58**(2), 337-351.
47. D.D. Joseph, R.L. Fosdick, 1973. The free surface on a liquid between cylinders rotating at different speeds; Part I, *ARMA*, **49**(5), 321-380.
48. D.D. Joseph, G.S. Beavers, R.L. Fosdick, 1973. The free surface on a liquid between cylinders rotating at different speeds; Part II, *ARMA*, **49**(5), 381-401.
49. V.P. Gupta, D.D. Joseph, 1973. Bounds for heat transport in a porous layer, *J. Fluid Mech.*, **57**(3), 491-514.
50. D.D. Joseph, 1974. Response curves for plane Poiseuille flow, *Adv. Applied Mech.*, **14**, 241-277.
51. D.D. Joseph, 1974. Repeated supercritical branching of solutions arising in the variational theory of turbulence, *ARMA*, **53**(2), 101-130.
52. G.S. Beavers, D.D. Joseph, 1974. Tall Taylor cells in polyacrylamide solutions, *Physics of Fluids*, **17**(3), 650-651.
53. D.D. Joseph, T.S. Chen, 1974. Friction factors in the theory of bifurcating Poiseuille flow through annular ducts, *J. Fluid Mech.*, **66**(1), 189-207.
54. D.D. Joseph, 1974. Slow motion and viscometric motion; stability and bifurcation of the rest state of a simple fluid, *ARMA*, **56**, 99-157.
55. L. Sturges, D.D. Joseph, 1975. Slow motion and viscometric motion, Part V: the free surface on a simple fluid flowing down a tilted trough, *ARMA*, **59**(4), 359-387.
56. D.D. Joseph, D.A. Nield, 1975. Stability of bifurcating time-periodic and steady solutions

- of arbitrary amplitude, *ARMA*, **58**(4), 369-380.
57. D.D. Joseph, L. Sturges, 1975. The free surface on a liquid filling a trench heated from its side, *J. Fluid Mech.*, **69**(3), 565-589.
 58. G.S. Beavers, D.D. Joseph, 1975. The rotating rod viscometer, *J. Fluid Mech.*, **69**(3), 475-511.
 59. D.D. Joseph, 1976. Factorization theorems for the stability of bifurcating solutions, *Proceedings of Conference, Turbulence and Navier Stokes Equations, University of Paris-Sud, Orsay, June 12-13, 1975*, Roger Temam, ed., 565, 85-93.
 60. D.D. Joseph, B.S. Beavers, 1976. The free surface on a simple fluid between cylinders undergoing torsional oscillations, *ARMA*, **62**(4), 323-352.
 61. L.D. Sturges, D.D. Joseph, 1977. The free surface on a simple fluid between cylinders undergoing torsional oscillations. Part III, Oscillating planes, *ARMA*, **64**(3), 245-267.
 62. D.D. Joseph, 1977. Perturbations of the rest state of a simple fluid: the Weissenberg effect induced by torsional oscillation of a rod, *Proceedings of VII-th International Congress on Rheology*, 242-243.
 63. D.D. Joseph, G.S. Beavers, 1977. Free surfaces induced by the motion of viscoelastic fluids, *Proceedings of ASME Symposium on Viscoelastic Fluids*, R.S. Rivlin, Yale, 59.
 64. D.D. Joseph, 1977. The convergence of biorthogonal series for biharmonic and stokes flow edge problems, Part I, *SIAM J. Appl. Math.*, **33**(2), 337.
 65. D.D. Joseph, 1977. Rotating simple fluids, *ARMA*, **66**(4), 311-344.
 66. D.D. Joseph, 1977. The bifurcation of T-periodic solutions into nT-periodic solutions and Tori, *Proceedings of International Workshop on Synergetics at Schloss Elmau, Bavaria, May 2-7, 1977*, H. Haken, ed.
 67. D.D. Joseph, 1977. Factorization theorems, stability and repeated birucation, *ARMA*, **66**(2), 99-118.
 68. G. Iooss, D.D. Joseph, 1977. Bifurcation and stability of nT-periodic solutions branching from T-periodic solutions at points of resonance, *ARMA*, **66**(2), 135-172.
 69. G.S. Beavers, D.D. Joseph, 1977. Novel Weissenberg effects, *J. Fluid Mech.*, **81**(2), 265-272.
 70. C.H. Liu, D.D. Joseph, 1977. Stokes flow in wedge-shaped trenches, *J. Fluid Mech.*, **80**(3), 443-463.
 71. D.D. Joseph, G.S. Beavers, 1977. Free surface problems in rheological fluid mechanics, *Rheol. Acta*, Dr. Dietrich Steinkopff, ed., **16**, 169-189.
 72. D.D. Joseph, 1978. Hydrodynamic stability and bifurcation, Fluid Dynamics Transactions (Arch. Mechaniki Stosovanej), *Proceedings of XIIIth Biennial Fluid Dynamics Symposium, Olztyn-Kortowo, Poland Sept 5-10, 1977*, **9**, 177-228.
 73. J.Y. Yoo, D.D. Joseph, 1978. Stokes flow in a trench between concentric cylinders, *SIAM J. Appl. Math.*, **34**(2), 247-285.
 74. D.D. Joseph, L. Sturges, 1978. The convergence of biorthogonal series for biharmonic and Stokes flow edge problems: Part II, *SIAM J. Appl. Math.*, **34**(1), 7-26.
 75. C.H. Liu, D.D. Joseph, 1978. Stokes flow in conical trenches, *SIAM J. Appl. Math.*, **34**(2), 286-296.
 76. D.D. Joseph, 1978. Constitutive equations and free surfaces, *Contemporary Developments in Continuum Mechanics and Partial Differential Equations*, G.M. de La Penha, L.A. Medeiros, 254-283.
 77. D.D. Joseph, 1979. A new separation of variables theory for problems of Stokes flow and

- elasticity, *2nd Symposium on Trends in Applications of Pure Mathematics to Mechanics*, London; Pitman Publishing, 129.
78. D.D. Joseph, 1979. Factorization theorems and repeated branching of solutions at a simple eigenvalue, *Annals of the New York Academy of Sciences*, **316**, 150-167.
 79. D.D. Joseph, 1979. Direct and repeated bifurcation into turbulence, *Approximation Methods for the Navier-Stokes Equations*, Springer Lecture Notes in Mathematics, R. Rautmann, ed., **771**, 249-271.
 80. J. Yoo, D.D. Joseph, G.S. Beavers, 1979. Higher-order theory of the Weissenberg effect, *J. Fluid Mech.*, **92**(3), 529-590.
 81. D.D. Joseph, 1979. Perturbation of state of rest and rigid motion of simple fluids and solids, *J. Non-Newtonian Fluid Mech.*, **5**, 13-31.
 82. G.S. Beavers, D.D. Joseph, 1979. Experiments on free surface phenomena, *J. Non-Newtonian Fluid Mech.*, **5**, 323-352.
 83. J. Sanders, V. O'Brian, D.D. Joseph, 1980. Stokes flow in a driven sector by two different methods, *J. Applied Mech.*, **87**, 482-484.
 84. B.E.D. Kolpin, G.S. Beavers, D.D. Joseph, 1980. Free surface on a simple fluid between cylinders undergoing torsional oscillations; IV, Oscillating Rods, *J. Rheol.*, **24**(6), 719-739.
 85. P.M. Dixit, D.D. Joseph, 1980. Motions perturbing states of rest of viscoelastic solids, *Transactions of the 25th Conference of Army Mathematicians*, **80**(1), 503-584.
 86. G. Iooss, D.D. Joseph, 1980. The behaviour of solutions lying on an invariant 2-Torus arising from the bifurcation of a periodic solution, *Proceedings of a Conference on Bifurcation Theory at Bielefeld, Germany, October 1979*, H. Amann, N. Bayley, K. Kirchgasser, eds., Pitman Pub., 92-114.
 87. D.D. Joseph, 1980. An integral invariant for jets of liquid into air, *ARMA*, **79**, 389-393.
 88. D.D. Joseph, 1980. Bifurcation in fluid mechanics, *Proceedings of IUTAM Toronto*, North Holland, 1980, 295-305.
 89. D.D. Joseph, 1980. Bifurcation of periodic solutions, *Recent Methods in Nonlinear Analysis and Applications*, Liquori, ed., 4.
 90. G.S. Beavers, J.Y. Yoo, D.D. Joseph, 1980. The free surface on a liquid between cylinders rotating at different speeds; Part III, *Rheol. Acta*, Dietrich Steinkopff, Verlag, Darmstadt, **19**, 19-31.
 91. L.D. Sturges, D.D. Joseph, 1980. A normal stress amplifier for the second normal stress difference, *J. Non-Newtonian Fluid Mech.*, **6**, 325-331.
 92. S.A. Trogdon, D.D. Joseph, 1980. The stick-slip problem for a round jet; I. Large surface tension, *Rheol. Acta*, **19**, 404-420.
 93. D.D. Joseph, 1980. Boundary conditions for thin lubrication layers, *Phys. Fluids* **23**(12), 2356-2358.
 94. D.D. Joseph, 1981. Hydrodynamic stability and bifurcation, *Topics in Applied Physics, Hydrodynamic Instabilities and the Transition to Turbulence*, H.L. Swinney, J.P. Gollub, eds., **45**, 27-76.
 95. D.D. Joseph, 1981. Instability of the rest state of fluids of arbitrary grade greater than one, *ARMA*, **75**(3), 251-256.
 96. P.M. Dixit, A. Narain, D.D. Joseph, 1981. Free surface problems induced by motions perturbing the natural state of simple solids, *ARMA*, **77**(3), 199-261.
 97. D.D. Joseph, 1981. Mathematics, Mechanics, and Engineering: an essay on the

- contribution of applied mechanics to engineering and applied science, *ASME-SMAC Forum*, J. Fong, ed.
98. D.D. Joseph, 1981. Lectures on bifurcation from periodic orbits, *Dynamical Systems and Turbulence, Warwick 1980; Proceedings of a Symposium Held at Univ. of Warwick, 1979/80*, D.A. Rand, L.-S. Young, eds.; Springer Lecture Notes in Mathematics, **898**, 1-12.
 99. S.A. Trogdon, D.D. Joseph, 1981. The stick-slip problem for a round jet; II, Small surface tension, *Rheol. Acta*, **20**(1), 1-13.
 100. J. Sanders, D.D. Joseph, G.S. Beavers, 1981. Rimming flow of a viscoelastic liquid inside a rotating horizontal cylinder, *J. Non-Newtonian Fluid Mech.*, **9**, 269-300.
 101. D.D. Joseph, L.D. Sturges, W.H. Warner, 1982. Convergence of biorthogonal series of biharmonic eigenfunctions by the method of titchmarsh, *ARMA*, **78**(3), 223-274.
 102. D.D. Joseph, D.A. Neild, G. Papanicolaou, 1982. Nonlinear equation governing flow in a saturated porous medium, *Water Resources Research*, **18**(4), 1049-1052.
 103. A. Narain, D.D. Joseph, 1982. Linearized dynamics for step jumps of velocity and displacement of shearing flows of a simple fluid, *Rheol. Acta*, **21**, 228-250.
 104. D.D. Joseph, 1982. The application of bifurcation theory to physical problems, *Proceedings of 9th US National Congress of Applied Mechanics, Held at Cornell Univ, Ithaca, NY June 21-25, 1982*, Y.H. Pao, et al, 433-436.
 105. P. Dixit, D.D. Joseph, 1982. The shape of stress-free surfaces on a sheared block, *SIAM J. Appl. Math.*, **47**(3), 653-677.
 106. S.A. Trogdon, D.D. Joseph, 1982. Matched eigenfunction expansions for slow flow over a slot, *J. Non-Newtonian Fluid Mech.*, **10**, 185-213.
 107. J.C. Saut, D.D. Joseph, 1983. Fading memory, *ARMA*, **81**(1), 53-95.
 108. A. Narain, D.D. Joseph, 1983. Remarks about the interpretation of impulse experiments in shear flows of viscoelastic liquids, *Rheol. Acta*, **22**, 528-538.
 109. A. Narain, D.D. Joseph, 1983. Linearized dynamics of shearing deformation perturbing rest in viscoelastic materials, *Lecture Notes in Mathematics, Equadiff 82. Proceedings Worzburg 1982*, Also in Transactions of 28th Conference of Army Mathematicians, ARO Report, 83-1 (1983), **1017**, 476-507.
 110. D.D. Joseph, M. Renardy, J.-C. Saut, 1983. Examples and significance of change of type in viscoelasticity, *Transactions of the 39th Conference of Army Mathematicians*, 1-6.
 111. D.D. Joseph, 1983. Stability and bifurcation theory (course 5), *Chaotic Behavior of Deterministic Systems*, 1.
 112. D.D. Joseph, K. Nguyen, J.E. Matta, 1983. Jets into liquid under gravity, *J. Fluid Mech.*, **128**, 443-468.
 113. H.A. Tieu, D.D. Joseph, 1983. Extrudate swell for a round jet with large surface tension, *J. Non-Newtonian Fluid Mech.*, **13**, 203-222.
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 115. M. Ahrens, D.D. Joseph, M. Renardy, Y. Renardy, 1984. Remarks on the stability of viscometric flow, *Rheol. Acta*, **23**, 345-354.
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