

## Russel E. Caflisch

### List of Publications

#### Research Publications

1. "The Fluid Dynamic Limit of a Nonlinear Model Boltzmann Equation," (with G.C. Papanicolaou), *Comm. Pure Appl. Math.*, 32 (1979), pp. 521-554.
2. "Navier-Stokes and Boltzmann Shock Profiles for a Model of Gas Dynamics," *Comm. Pure Appl. Math.*, 32 (1979), pp. 589-616.
3. "The Boltzmann Equation with a Soft Potential, Part I: Linear, Spatially Homogeneous," *Comm. Math. Phys.*, 74 (1980), pp. 71-95.
4. "The Boltzmann Equation with a Soft Potential, Part II: Nonlinear, Spatially-Periodic," *Comm. Math. Phys.*, 74 (1980), pp. 97-109.
5. "Distortion of the Arterial Pulse" (with C. Peskin, G. Strumolo), *Math. Bio. Sci.*, 51 (1980), pp. 229-260.
6. "An Inverse Problem for Toeplitz Matrices and the Synthesis of Discrete Transmission Lines," *J. Linear Algebra and Its Applications*, 38 (1980), pp. 207-225.
7. "The Fluid Dynamic Limit of the Nonlinear Boltzmann Equation," *Comm. Pure Appl. Math.*, 33 (1980), pp. 651-666.
8. "Quench Front Propagation" (with J.B. Keller), *Nucl. Eng. and Design*, 65 (1981), pp. 97-102.
9. "Evaluation of a Function at Infinity from Its Power Series" (with K.C. Nunan), *Phys. Rev. Letters*, 46 (1981), pp. 1255-1256.
10. "The Fluid-Dynamic Limit of a Model Boltzmann Equation in the Presence of a Shock," *INRIA Report #81* (1981).
11. "Shock Profile Solutions of the Boltzmann Equation" (with B. Nicolaenko), *Comm. Math. Phys.*, 86 (1982), pp. 161-194.
12. "Fluid Dynamics and the Boltzmann Equation," in *Studies Stat. Mech.*, Vol. 10, Nonequilibrium Phenomena I: The Boltzmann Equation, E.W. Montroll and J.L. Lebowitz, eds., North-Holland, 1983, pp. 193-223.
13. "Dynamic Theory of Suspensions with Brownian Effects" (with G.C. Papanicolaou), *SIAM J. Appl. Math.* 43 (1983), 885-906.
14. "Shock Waves and the Boltzmann Equation" (with B. Nicolaenko), in *Nonlinear PDE*, J. Smoller, ed., *Contemp. Math.*, Vol. 17, AMS, 1983, pp. 35-44.
15. "Instability in Settling of Suspensions Due to Brownian Effects" (with G.C. Papanicolaou), *Theory of Dispersed Flow* ed. Richard E. Meyer, Proc. Adv. Sem. MRC, Madison, WI, 1983, pp. 73-80.
16. "Fluid Dynamics and the Boltzmann Equation," *Proceeding VII Intern. Cong. Math. Physics*, Boulder, CO, 1983, and *Physica* 124A (1984) 171-180.
17. "Nonlinear Dynamical Theory of the Elastica" (with J. Maddocks), *Proc. Roy. Soc. Edinburgh*, 99A (1984) 1-23.
18. "Global Existence for a Nonlinear Theory of Bubbly Liquids," *Comm. Pure Appl. Math.*, 38 (1985) 157-166.

19. "Effective Equations for Wave Propagation in Bubbly Liquids" (with M. Miksis, G.C. Papanicolaou, L. Ting), *J. Fluid Mechanics*, 153 (1985) 259-273.
20. "Equilibrium for Radiation in a Homogeneous Plasma" (with C.D. Levermore), *Phys. Fluids*, 29 (1986) 748-752.
21. "Wave Propagation in Bubbly Liquids at Finite Volume Fraction" (with M. Miksis, G.C. Papanicolaou, L. Ting), *J. Fluid Mechanics*, 160 (1985) 1-14.
22. "Variance in the Sedimentation Speed of a Suspension" (with J. Luke), *Phys. Fluids*, 28 (1985) 759-760.
23. "Le Probleme de Milne Pour L'Equation de Boltzmann" (with C. Bardos, B. Nicolaenko), *Comptes Rendus*, 300 (1985) 149-152.
24. "Thermal Layer Solutions of the Boltzmann Equation" (with C. Bardos, B. Nicolaenko), in *Statistical Physics and Dynamical Systems, Rigorous Results*, ed. J. Fritz, A. Jaffe and D. Szasz, *Progress in Physics*, vol. 10, Birkhauser (1985) 235-252.
25. "Sedimentation of a Dilute Suspension," *Proceedings Workshop on Turbulence and Fluid Mixtures, INRIA-NSF, Springer Lecture Notes in Physics*. 230
26. "Planar Boundary Value Problems for Rarefied Gases," *Proc. 17th Biennial Fl. Dynamics Symp.* (1985) Gdansk. in *Fluid Dynamic Trans.* 13 89-123.
27. "The Half-Space Problem for the Boltzmann Equation at Zero Temperature," *Comm. Pure Appl. Math.*, 38 (1985) 529-547.
28. "The Milne and Kramers Problems for the Boltzmann Equation of a Hard Sphere Gas" (with C. Bardos, B. Nicolaenko), *Comm. Pure Appl. Math.*, 39 (1986) 323-352.
29. "Mathematical Method for the Equations of Kinetics of Gases," (with C.V.M. Van der Mee) *Transport Th. Stat. Physics* 15 (1986) 353-367.
30. "Stability of Shock Wave Profiles for a Model Boltzmann," Equation (with T.P. Liu) 15th RGD Symposium, Grado, (1986) 3-9.
31. "Long Time Existence for Slightly Perturbed Vortex Sheets" (with O. Orellana), *Comm. Pure Appl. Math.*, (1986) 807-838.
32. "Statistical Properties of Sedimenting Suspensions and the Point Particle Approximation," (with J.H.C. Luke) in *Advances in Multiphase Flow and Related Problems*, ed. Papanicolaou, SIAM (1986) 23-34.
33. "Wave Propagation in a Bubbly Liquid" (with M. Miksis, G.C. Papanicolaou, L. Ting), *Lectures in Appl. Math.*, 23 (1986) 327-343.
34. "Long Time Existence and Singularity Formation for Vortex Sheets," *Workshop on Vortex Methods*, ed. Anderson and Greengard. *Springer Lect. Notes Math.*, 1360 (1987) 1-8.
35. "Asymptotic Expansions of Solutions for the Boltzmann Equation," *J. Transport Th. Stat. Phys.*, 16 (1987) 701-725.
36. "Statistical Modeling of a Dilute Fluid-Particle Suspension," in *Hydrodynamic Behavior and Interacting Particle Systems*, IMA vol. 9, ed. Papanicolaou, Springer (1987) 1-12.
37. "Stability of Shock Waves for the Broadwell Equations" (with T.-P. Liu) *Comm. Math. Phys.* 114 (1988) 103-130.
38. "Periodic Solutions for Three Sedimenting Spheres" (with J. Luke, C. Lim and A. Sangani) *Phys. Fl.* 31 (1988) 3175-3179.
39. "Asymptotics of the Boltzmann Equation and Fluid Dynamics," in *Kinetic Theory and Gas Dynamics*

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41. "Well-Posedness of Initial and Boundary Value Problems for the Boltzmann Equation," Proc. 16th Intern. Symp. Rarefied Gas Dyn. (1988) 3-14.

42. "Mathematical Analysis of Vortex Dynamics," Proc. Workshop on Math. Aspects of Vortex Dyn. (1988) 1-24, SIAM.

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44. "The Sound of a Singularity" (with F. Lund) *Physics of Fluids A*, 1 (1989) 909-910.

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93. R. Caffisch, B. Moskowitz, *Smoothness and dimension reduction in Quasi-Monte Carlo methods.* *J. Math. Comp. Modeling*, (same as #66) reprinted in *Monte Carlo. Methodologies and Applications for Pricing and Risk Management*, ed. B. Dupire, 315-326, RISK, London.

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