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Ph.D.	1979	California Institute of Technology	Applied Mathematics
B.S.	1975	California Institute of Technology	Physics

Doctoral Dissertation

Some effects of spatial nonuniformities in chemically reacting mixtures, thesis, Calif. Inst. of Technology, (1979). Advisor: D.H. Cohen.

Publications:

A **Peer Reviewed**

a Submitted for publication

1 G. von Winckel, S. Krishna, and E. A. Coutsias, *Spectral Element Modeling of Semiconductor Heterostructures*, (submitted, Phys. Rev. B, June 22, 2004).

b **Journal Articles**

1 E. A. Coutsias, C. Seok, and K. A. Dill, *Using Quaternions to calculate RMSD*, (to appear, Journal of Computational Chemistry; submitted: December 2003; revised, June 7, 2004; accepted, July 13, 2004).

2 E. A. Coutsias, C. Seok, M. P. Jacobson and K. A. Dill, *A Kinematic View of Loop Closure*, Journal of Computational Chemistry 25, 510-528, 2004.

3 D. Sheltraw and E.A. Coutsias, *Invertibilty of Current Density from Near-Field Electromagnetic Data*, J. Applied Phys, v94, n8, pp. 5307-5315 (2003).

4 H.J.H. Clercx, A.H. Nielsen, D.J. Torres and E.A. Coutsias, *Two-dimensional turbulence in square and circular domains with no-slip walls*, European J. of Mechanics B - Fluids 20(2001), 557-576.

5 L. Ketai, C.M. Coutsias, S. Williamson and E.A. Coutsias, *Thin–Section CT Evidence of Bronchial Thickening in Children with Stable Asthma: Bronchoconstriction or Airway Remodeling?*, Academic Radiology, 8(3), p.257-264, (2001).

6 K. Bergeron, E.A. Coutsias, J.P. Lynov and A.H. Nielsen, *Dynamical properties of forced shear layers in an annular geometry*, Journal of Fluid Mechanics, 402, p.255-289, (2000).

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12 K. Bergeron, E.A. Coutsias, J.P. Lynov and A.H. Nielsen. *Self Organization in 2D Circular Shear Layers*, Physica Scripta T67, 1996, p. 33-37.

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15 G. Harel, G. Kurizki, J.K. McIver and E.A. Coutsias, *Optimized preparation of quantum states by conditional measurement*, Phys. Rev. A. 53(6), June 1996, p. 4534–4538.

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17 H.L. Pécseli, E.A. Coutsias, T. Huld, J.P. Lynov, A.H. Nielsen and J. Juul Rasmussen *Coherent vortical structures in two-dimensional plasma turbulence*, Plasma Phys. Contr. Fusion, **34**, 2065-2070, (1992).

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23 E.A. Coutsias and J.K. McIver. *Non relativistic Kapitza-Dirac scattering* Phys. Rev. A, 31, 3155-3168, (1985).

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c **Edited Volumes**

1 P.M. Alsing, E.A. Coutsias and J.C. McIver, The Interfacial Behavior of Liquid Water Near Hydrophobic Surfaces: A Parallel Force Decomposition Molecular Dynamics Code, in *Applications of High-Performance Computing in Engineering VI*, Eds. M. Ingber, C.A. Brebbia and H. Power, WIT Press, Southampton, Boston (2000), p.81-90.

2 E.A. Coutsias, J.P. Lynov, A.H. Nielsen, M. Nielsen, J.Juul Rasmusen and B. Stenum. *Vortex Dipoles Colliding with Curved Walls Proc. of "Future Directions in Physical and Biological Systems"*, Lyngby, Denmark, P.L. Christiansen, J.C. Eilbeck, and R.D. Parmentier, eds., Plenum Press, New York, 51-54, (1992).

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4 E.A. Coutsias and H. Segur, *A new formulation for dendritic crystal growth in two space dimensions Asymptotics beyond All Orders*, H. Segur, H. Levin and S. Tanveer, eds., Plenum Press, New York, 87-104, (1991).

5 N.D. Kazarinoff and E.A. Coutsias. *On cornu spirals, disorder, self-similarity, and Jacobi's $\theta_3(U,\tau)$ Bifurcation: Analysis, Algorithms, Applications*, Vol. 79 in International Series of Numerical Mathematics, T. Küpper, R. Seydel, K. H. Troper, eds., Birkhäuser, Berlin, 139-152, (1987).

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d **Book Chapters**

1 D.J. Sullivan, J.E. Walsh and E.A. Coutsias. *Virtual cathode oscillator (Vircator) theory High-Power Microwave Sources*, Ch.13, V.L. Granatstein and I. Alexeff, eds., Artech House, Boston, 441-505, (1987).

B **Conference Proceedings Contributions**

1 A.H. Nielsen, D.J. Torres and E.A. Coutsias. *Decaying two-dimensional Turbulence in Bounded Flows*, 1998 ICPP and 25th EPS Conference on Controlled Fusion and Plasma Physics, Praha, 29 June–3 July, ECA Vol. 22C(1998), 2346–2349.

2 J.P. Lynov, E.A. Coutsias and J.S Hesthaven. *New spectral algorithms for accurate simulations of bounded flows*, Proceedings of Eurotherm Seminar 36, "Advanced Concepts and Techniques in Thermal Modelling", Poitier, France, Sep. 21-23 (1994), pp. N16–N21.

3 E.A. Coutsias, K. Bergeron, J.P. Lynov and A.H. Nielsen. *Self Organization in 2D Circular Shear Layers* AIAA Paper 94-2407, 25th Plasmadynamics and Lasers Conference, June 20-23, 1994, Colorado Springs, CO, p.1-12.

4 E.A. Coutsias, T. Huld and J.P. Lynov. *Numerical studies of the evolution of coherent structures in two-dimensional shear flow*, Preprint volume of the Ninth Symposium on Turbulence and Diffusion, April 30-May 3, 1990, Roskilde, Denmark, Published by the American Meteorological Society, Boston, MA, 212-215.

5 D.J. Sullivan and E.A. Coutsias. *Virtual cathode formation in electron beams as a bifurcation phenomenon High Power Beams '81*, Proceedings, 4th International Topical Conference on High-Power Electron and Ion-Beam Research and Technology, H.J. Doucet and J.M. Buzzi, Eds., Ecole Polytechnique, Paris, France, 371-378, June 29-July 3, l981.

C To be submitted

1 D. Sheltraw and E.A. Coutsias, *The Inverse Magnetometry Problem on a Conducting Shell* , To be submitted (2004).

2 E. A. Burroughs, E. A. Coutsias, L. Romero, *A New Model of the Dynamics of the Flow in a Thermosyphon*, To be submitted (2004).

3 E. A. Coutsias, M. Adhikarri and J.K. McIver, *A spectral method for the accurate solution of certain stiff delay-differential equations*, To be submitted (2004).

D Select unpublished writings

1 E.A. Coutsias and L. Romero, *The Quaternions with an application to Rigid Body Dynamics*, Lecture Notes for the Seminar on Dynamics and Stability Theory, Dept. of Mathematics, Univ. of New Mexico, February 1999.

2 E. A. Coutsias and P.A. Alsing, *Numerical Integration Scheme for md_serial.f*, manual for the molecular dynamics algorithm *md_serial.f* developed for the simulation of water near hydrophobic surfaces, summer 2000.

3 E.A. Coutsias and C. Seok, *On the optimal translation–rotation relating two sets of vectors*, Report for the design of an optimal superposition algorithm for optimal comparison of two shapes, developed for incorporation in a protein folding numerical code, Fall 2000.