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Ph.D. 1979 California Institute of Technology Applied Mathematics
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Doctoral Dissertation

Some effects of spatial nonuniformities in chemically reacting mixtures, thesis, Calif. Inst. of Technology, (8/13/1979). Advisor: D.S. Cohen.

Publications (8/4/05):

A Peer Reviewed

a Journal Articles

- 1 G. von Winckel, S. Krishna, and E. A. Coutsias, *Spectral Element Modeling of Semiconductor Heterostructures*, Mathematical and Computer Modeling (to appear), 2005.
- 2 E. A. Coutsias, C. Seok, K. Dill. *Rotational Superposition and least squares: The SVD and Quaternions approaches yield identical results. (Reply to the comment by G. Kneller)*. Journal of Computational Chemistry (to appear), 2005.
- 3 B. Burroughs, E. A. Coutsias, L. Romero, *A reduced-order partial differential equation model for dynamics of the flow in a thermosyphon*. Journal of Fluid Mechanics (to appear), 2005.
- 4 E. A. Coutsias, C. Seok, M. J. Wester and K. A. Dill. *Resultants and Loop Closure*. International Journal of Quantum Chemistry (to appear), 2005.
- 5 B. Ho, E. A. Coutsias, C. Seok, K. Dill, *The flexibility in the proline ring couples to the protein backbone*. Protein Science, 2005, 14:1011-1018.
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- 8 D. Sheltraw and E. A. Coutsias, *Invertibility of Current Density from Near-Field Electromagnetic Data*, J. Applied Phys, v94, n8, pp. 5307-5315 (2003).
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- 13 D. J. Torres and E. A. Coutsias, *Pseudospectral Solution of the Two-Dimensional Navier-Stokes Equations in a Disk*, SIAM Journal on Scientific Computing, 21(1), 378-403 (1999).
- 14 E. A. Coutsias and N. D. Kazarinoff, *The Approximate Functional Formula for the Theta Function and Diophantine Gauss Sums*, Transactions of the AMS, 350(2), p.615-641, (1998).
- 15 E. A. Coutsias, M. Wester and A. S. Perelson, *A Nucleation Theory of Cell Surface Capping*, J. Statistical Physics, 87(5/6) p.1179-1203, (1997).

- 16 E. A. Coutsias, T. Hagstrom and D. J. Torres, *An efficient spectral method for ordinary differential equations with rational function coefficients*, *Mathematics of Computation*, **65** (216), 611-635, (1996).
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- 21 B. S. Masson and E. A. Coutsias *Acoustic Wave nonlinearity in stimulated Brillouin scattering*, *J. Opt. Soc. Am., B*, 1367-1373, (1994).
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- 33 D. S. Cohen, E. A. Coutsias and J. C. Neu. *Stable oscillations in single species growth models with hereditary effects* *Mathematical Biosciences*, 44, 255-268, (1979).

b Edited Volumes

- 1 Sillerud, L.O., Popa, S.G., Coutsias, E.A., Sheltraw, D., Kuethe, D., Adolphi, N. *Research Results on Biomagnetic Imaging of Lung Tumors*. *Proc. SPIE Vol. 5692*, p. 1-10, *Advanced Biomedical and Clinical Diagnostic Systems III*; Tuan Vo-Dinh, Warren S. Grundfest M.D., David A. Benaron M.D., Gerald E. Cohn; Eds., April 2005.
- 2 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*

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- 6 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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c 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", Poitiers, France, Sep. 21-23 (1994), pp. N16-N21.
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- 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, 1981.

C Technical Reports

- 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. (Sandia Technical Report, SAND2004-0153, 2004).

D Select unpublished writings

- 1 D. Sheltraw and E. A. Coutsias, *Inverse Magnetometry on a Conducting Shell*, (2004).
- 2 M. Adhikarri, E. A. Coutsias, and J. K. McIver, *A spectral method for the accurate solution of certain stiff delay-differential equations*, (2003).
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