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JOINT SERVICES ELECTRONICS PROGRAM

FINAL REPORT
(Contract F49620-87-C-0041)
(1 May 1987 — 31 May 1990)

W. G. Oldham and C. Hu

31 July 1990

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JOINT SERVICES ELECTRONICS PROGRAM

FINAL REPORT
May 1987 - May 1990

DIRECTOR'S OVERVIEW

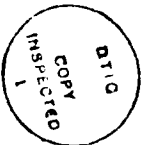
The Joint Services Electronics Program (JSEP) is an important part of the electronics research at the University of California, Berkeley. JSEP is particularly important to the development of new research directions and new faculty investigators. It also provides much needed support for the more basic electronics research. Furthermore, JSEP has encouraged collaborative research involving multiple principal investigators per project.

Over the period May 1987 to May 1990 JSEP has supported 20 faculty investigators, 57 students and produced 65 publications in journals or conference proceedings, 14 Ph.D. degrees and 22 M.S. degrees.

The research program is organized into two themes: high-speed wide-band elements for high frequency electronics, and new architecture for parallel computation. Under the program, several important new phenomena were discovered for highly scaled MOSFETs and the world's fastest room temperature silicon transistor (22ps, fastest for either bipolar or MOS transistors) was fabricated. Nonlinear guided-wave devices such as optical correlator and spectrometer were created. Techniques for achieving tolerance and efficient programming in artificial neural networks were found.

The most productive work units of the present program will be expanded and continued in the next three-year JSEP contract. The new program is organized around three themes: quantum electronics, electronic devices, and neural networks.

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STUDENTS PARTIALLY OR FULLY SUPPORTED BY JSEP: DEGREES AWARDED

Student	Degree	Year
Behtash, Saman	Ph.D.	88
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Chang, Hua-Chen	Ph.D.	90
Chen, Jian	M.S.	88
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Chung, James	M.S.	88
Cieslak, Randall	Ph.D.	88
Cline, David	M.S.	89
Fang, Jiayuan	Ph.D.	89
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Lee, Huey	M.S.	89
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Tsay, Ren-Song	Ph.D.	89
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14 Ph.D.'s and 22 M.S.'s

PUBLICATIONS/PRESENTATIONS

May 87 - May 90

Hu

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Oldham

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Sangiovanni-Vincentelli

A. Kramer and A. Sangiovanni-Vincentelli, "Efficient Parallel Learning Algorithms for Neural Networks" *Proc. of the 1988 IEEE Conf. on Neural Information Processing Systems-Natural and Synthetic*, Morgan Kauffman Publishers, San Mateo, CA, 1989.

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Sastry

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Schwarz

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Smith

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H. P. Lee, Y.-H. Huang, X.-M. Liu, H. Lin, J. S. Smith, E. R. Weber, P. Yu, S. Wang, and Z. Liliental-Weber, "Photoluminescence and Transmission Electron Microscopy Studies of Selective-Area Molecular Beam Epitaxy of GaAs Film on Si and Tensile Stress Relief by Chemical Etching of GaAs on Si Sample," *MRS Symposium Proceedings*, Vol. 116, pp. 219 (1988).

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Van Duzer

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Varaiya

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Wang

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