

RLE PROGRESS REPORT

No. 121

JANUARY 1979

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
RESEARCH LABORATORY OF ELECTRONICS
CAMBRIDGE, MASSACHUSETTS 02139

The Research Laboratory of Electronics is an interdepartmental laboratory in which faculty members and graduate students from numerous academic departments conduct research.

The research in this laboratory for the year 1978 was made possible by support extended the Massachusetts Institute of Technology by the following agencies.

Joint Services Electronics Program (U.S. Army, U.S. Navy, U.S. Air Force)

Contract DAAG29-78-C-0020
U.S. Army—Army Research Office—Durham
Contract DAAG29-77-C-0048
U.S. Navy—Office of Naval Research
Contract N00014-75-C-0951
Contract N00014-77-C-0132
U.S. Air Force—Eglin
Contract F08635-78-C-0115
U.S. Air Force—Office of Scientific Research
Grant AFOSR-3042 Grant AFOSR-77-3143
Grant AFOSR-76-2894 Grant AFOSR-78-3593
Grant AFOSR-76-2972

National Aeronautics and Space Administration
Contract NAS5-21980 Grant NGL 22-009-013
Contract NAS5-22929 Grant NSG-1551
Contract NAS5-23677 Grant NSG-5157
Contract NAS5-24139

National Institutes of Health
Grant 5 PO1 NS13126 Grant 5 RO1 NS11153
Grant 1 RO1 GM23597 Grant 5 RO1 NS12846
Grant 1 RO1 GM23678 Grant 5 RO1 NS13028
Grant 1 RO1 NS14092 Grant 5 SO7 RR07047
Grant 2 RO1 NS04332 Grant 1 T32 NS07099
Grant 2 RO1 NS11080 Grant 5 T32 GM07301
Grant 2 RO1 NS11680 Grant 5 T32 NS07040
Grant 5 RO1 GM20370 Grant 5 T32 NS07047
Grant 5 RO1 NS10916 Grant 5 TO1 EY00090

National Institute of Mental Health
Grant 5 PO1 MH13390

National Science Foundation
Grant AST77-06052 Grant ENG76-01654
Grant AST77-12960 Grant ENG76-24117
Grant AST77-26896 Grant ENG77-00340
Grant BNS76-80278 Grant ENG77-24981
Grant BNS77-16861 Grant ENG78-21603
Grant BNS77-21751 Grant PHY77-07156
Grant BNS77-26871 Grant PHY77-09155
Grant CHE76-81750 Grant SED76-81985
Grant DMR77-10084

U.S. Department of Energy
Contract ET-78-C-01-3019 Contract ET-78-S-02-4714
Contract ET-78-S-02-4681 Contract ET-78-S-02-4886
Contract ET-78-S-02-4682 Contract EY-76-S-02-2766
Contract ET-78-S-02-4690 Grant EG-77-S-02-4370

U.S. Department of Commerce—National Oceanic Atmospheric Administration
Grant 04-8-M01-1

Associated Press (Grant)
Bell Laboratories (Grant)
Health Sciences Fund (Grant)
Providence Gravure, Inc. (Grant)
Schlumberger Doll Research Center (Grant)
Sony Corporation (Grant)
Taylor Publishing Company (Grant)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
RESEARCH LABORATORY OF ELECTRONICS

RLE PROGRESS REPORT No. 121

January 1979

Submitted by: P. A. Wolff
J. Allen

FOREWORD

This report, No. 121 in a series of Progress Reports issued by the Research Laboratory of Electronics, contains the customary annual statement of research objectives and summary of research for each group. The report covers the period January 1, 1978-December 31, 1978, and the source of support is indicated for each project. On the masthead of each section are listed the academic and research staff and the graduate students who participated in the work of the group during the year. The listing of personnel in the back of the book includes only members of the laboratory during 1978.