CONTENTS

INTRODUCTORY REMARKS ix

SUPERRADIANCE IN EXPERIMENTALLY RELEVANT REGIMES 1
J. C. MacGillivray and M. S. Feld

EXPERIMENTS IN FIR SUPERRADIANCE 15
A. T. Rosenberger, S. J. Petuchowski and
T. A. DeTemple

COOPERATIVE EFFECTS IN ATOMIC METAL VAPORS 37
A. Flusberg, T. Mossberg, and S. R. Hartmann

QUANTUM BEAT SUPERFLUORESCENCE IN Cs 61
H. M. Gibbs

SINGLE-PULSE SUPERFLUORESCENCE IN CESIUM 79
Q. H. F. Vrehen

VISIBLE COOPERATIVE EMISSION IN INCOHERENTLY EXCITED
COPPER VAPOR 101
T. W. Karras, R. S. Anderson, B. G. Bricks
and C. E. Anderson

SOME EFFECTS OF RADIATION TRAPPING ON STIMULATED 115
VUV EMISSION IN Ar XIII. . . . . .
K. G. Whitney, J. Davis, and J. P. Apruzese

BEAM-PROFILE EFFECTS IN SELF-INDUCED TRANSPARENCY: ON-
RESONANCE SELF-FOCUSING OF COHERENT OPTICAL PULSES
IN ABSORBING MEDIA 139
F. P. Mattar and M. C. Newstein

MAXWELL-BLOCH EQUATIONS AND MEAN-FIELD THEORY
FOR SUPERFLUORESCENCE. 193
R. Bonifacio, M. Gronchi, L. A. Lugiato
and A. M. Ricca

THEORY OF FIR SUPERFLUORESCENCE 209
R. Sanders and R. K. Bullough

A MODEL OF A DEGENERATE TWO-PHOTON AMPLIFIER. 257
L. M. Narducci, L. G. Johnson, E. J. Seibert,
W. W. Eidson and P. S. Furcinitti

THEORETICAL DEVELOPMENT OF THE FREE-ELECTRON LASER. 291
F. A. Hopf and P. Meystre

FREE ELECTRON LASERS. 313
J. M. J. Madey and D. A. G. Deacon

CLASSICAL AND SEMICLASSICAL TREATMENT OF THE PHASE
TRANSITION IN DICKE MODELS. 335
R. Gilmore and C. M. Bowden

DISCUSSION AT THE COOPERATIVE EFFECTS MEETING 357
M. J. Konopnicki and A. T. Rosenberger

LIST OF CONTRIBUTORS. 381

INDEX. 383