

TABLE OF CONTENTS

THE NUCLEAR PHYSICS OF CHAIN REACTORS

I. PRINCIPAL CONCEPTS OF REACTOR THEORY AND THE USES OF RE- ACTORS	1
II. GENERAL DESCRIPTION OF NUCLEAR REACTIONS: THE CROSS-SECTION	18
III. RESONANCE REACTIONS	39
IV. NEUTRON CROSS-SECTIONS	55
V. THE FISSION PROCESS	106
VI. SHELL STRUCTURE OF NUCLEI AND GIANT RESONANCES	139

TRANSPORT THEORY OF NEUTRONS

VII. NEUTRON CHAIN REACTIONS	168
VIII. GENERAL REMARKS ABOUT DIFFUSION THEORY: DIFFUSION OF MONOENERGETIC NEUTRONS	181
IX. TRANSPORT THEORY AND DIFFUSION OF MONOENERGETIC NEUTRONS	219
X. ENERGY SPECTRUM DURING MODERATION	279
XI. DIFFUSION AND THERMALIZATION OF FAST NEUTRONS	317

GENERAL REACTOR THEORY

XII. THE BARE HOMOGENEOUS REACTOR	378
XIII. GENERAL APPLICATIONS OF HOMOGENEOUS REACTOR THEORY . .	413
XIV. APPLICATIONS TO SPECIFIC REACTOR SYSTEMS; TEMPERATURE CO- EFFICIENTS	439
XV. NON-UNIFORM REACTORS AND THE THEORY OF REFLECTORS . . .	490
XVI. PERTURBATION THEORY	537
XVII. REACTOR KINETICS	568

HETEROGENEOUS REACTORS

XVIII. HETEROGENEOUS CHAIN REACTORS: THE THERMAL UTILIZATION .	610
XIX. HETEROGENEOUS CHAIN REACTORS: THE RESONANCE ESCAPE PROB- ABILITY	656

TABLE OF CONTENTS

XX. HETEROGENEOUS CHAIN REACTORS: THE FAST EFFECT	696
XXI. THE MIGRATION AREA AND REACTOR DESIGN	724
XXII. REACTOR CONTROL STATICS	753

INDEXES

GENERAL INDEX	789
INDEX OF TABLES	799