TABLE OF CONTENTS

| | | Page |
|------|--|------|
| | LISTS OF FIGURES AND TABLES | V |
| I. | INTRODUCTION | 1 |
| | Gravity Wave Experiments. Motivation. Summary. | |
| II. | FOCUSSING MECHANISMS FOR GRAVITATIONAL RADIATION | 11 |
| | Introduction. Lens Focussing. Disk Focussing. Naked Singularities. Discussion. | |
| III. | RELATIVISTIC GEODESICS | 16 |
| | Introduction. Geodesics in the Schwarzschild Spacetime. Circular Geodesics in the Kerr Spacetime. Locally non- rotating Observers. Discussion. | |
| IV. | ORDINARY SYNCHROTRON RADIATION | 30 |
| | Introduction. Scalar Synchrotron Radiation in Flat Spacetime. Electromagnetic & Gravitational Synchrotron Radiation in Flat Spacetime. Discussion. | |
| v. | PERTURBATIONS OF SPACETIMES | 45 |
| | Introduction. The linearized Theory of Gravity. De- finition of Perturbations. The Linearization Procedure. Point Gauge dependent and Point Gauge independent Per- turbations. Perturbation Theory and Regge-Calculus. Regge-Wheeler Perturbation Technique. The Newman- | |
| | Penrose Formalism. General Relativity in the Formalism | |
| | of Geroch, Held & Penrose. Tetrad Gauge Transformations Metric Perturbations Revised. | • |

IV