

CONTENTS

<i>Preface</i>	<i>vii</i>
<i>Foreword</i>	<i>ix</i>
<i>Future Contributions</i>	<i>xi</i>
1. Introduction	1
2. Some Problems of Streak Tube Design	29
2.1. Tunneling Photoeffect Mechanism in Metallic Nanoparticles Activated by Cesium and Oxygen	30
2.2. The Granulated Gold-Film-based Semitransparent Photocathodes in the Visible Spectrum Range for Femtosecond Time-Resolution Experiments	39
2.3. A Grid-Structured Photocathode to Improve Temporal Resolution in Streak Tubes	45
2.4. Quasi-Spherical Electron Optics for High-Speed Single-Frame and Streak Imaging	56
2.5. Electrodynamics and Electron Optics of Slow-Wave Comb Structures	65
2.6. A Large-Format Picosecond Streak Tube with a Flat Photocathode and an Improved Image Curvature	72
2.7. 50-ps, Small, Meshless Streak Tube	76
2.8. 10-ps, X-ray Streak Camera for Laser and Laser Plasma Research	82
2.9. Toward Overcoming the 100 fs Time Resolution Barrier	87
3. Examples of Streak Image Tube Application	99
3.1. Light "Beats" Generation Using Phase-Modulated Laser Radiation	100
3.2. Bimodal Temporal Distribution of Photons in an Ultrashort Laser Pulse Passed Through a Turbid Medium	107
3.3. Temporal Shaping of Ultrashort Laser Pulses by Volume Bragg Gratings	119
3.4. Detection of Radiation from a Ti: Sapphire Laser with High Space-Time Resolution	124
3.5. Time-Intensity Profile Measurements of Stimulated Radiation from GaAs with a PS-1/S1 Picosecond Streak Camera	128
3.6. Formation and Development Dynamics of Femtosecond Laser Microplasma in Gases	136

3.7. Streak Camera Diagnostic of Femtosecond Laser Spark	150
3.8. Streak-Camera Investigation of the Detonation-like Mode of Optical Fiber Destruction under Intense Laser Radiation	157
4. Generation of Ultrashort Electron Bunches for Time-Resolved Electron Diffraction Experiments	165
4.1. The Design of a 500-fs Photoelectron Gun for Time-Resolved Electron Diffraction Experiments	165
4.2. Temporal Focusing of Electron Bunches with Time-Dependent Electric Fields	173
References	191
Contents of Volumes 151-179	207
Index	213

