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3.6.2. The Backgrounds; 3.6.3. The Installation of the NCD System; 3.6.4. Data-Taking Period; 3.7. Conclusions; Acknowledgments; References; 4. Neutrino Oscillation Physics with KamLAND: Reactor Antineutrinos and Beyond K. M. Heeger; 4.1. Neutrino Physics at Reactors: From the Discovery of $\bar{\nu}_e$ to Nuclear Non-Proliferation; 4.2. The KamLAND Detector; 4.2.1. Observation of Reactor Antineutrino Disappearance; 4.3. Spectral Distortion as a Signature of Neutrino Oscillation; 4.4. Toward a Precision Measurement of m_{21}^2 and θ_{12} ; 4.5. Other Neutrino Physics with KamLAND; 4.6. Test of MSW and Non-Standard Interactions in the KamLAND Low-Background Phase; 4.7. Summary and Conclusions; Acknowledgments; References; 5. K2K: KEK to Kamioka Long-Baseline Neutrino Oscillation Experiment R. J. Wilkes; 5.1. Introduction; 5.2. Neutrino Beam; 5.3. Beam Simulation; 5.4. The Near Detectors; 5.5. The Far Detector; 5.6. Neutrino Interaction Simulations; 5.7. Event Rates and Oscillation Analysis; 5.8. Summary and Conclusions; Acknowledgments; References; 6. MINOS P. Vahle; 6.1. Introduction; 6.2. The NuMI Beam; 6.3. The MINOS Detectors; 6.4. Calibration; 6.5. Event Selection; 6.6. Near Detector Data and Monte Carlo; 6.7. Predicting the Far Detector Spectrum; 6.8. Systematics; 6.9. Results; 6.10. Outlook; Acknowledgments; References; 7. The LSND and KARMEN Neutrino Oscillation Experiments W. C. Louis; 7.1. Introduction; 7.2. LSND; 7.2.1. Description of the Experiment; 7.2.2. Event Selection; 7.2.3. Neutrino Oscillation Signal and Background Reactions; 7.2.4. Neutrino Oscillation Results; 7.3. KARMEN; 7.3.1. Description of the Experiment; 7.3.2. Event Selection; 7.3.3. Neutrino Oscillation Signal and Background Reactions; 7.3.4. Neutrino Oscillation Results

Sommario/riassunto

This book reviews the status of a very exciting field - neutrino oscillations - at a very important time. The fact that neutrinos have mass has only been proved in the last few years and the acceptance of that fact has opened up a whole new area of study to understand the fundamental parameters of the mixing matrix. The book summarizes the results from all the experiments which have played a role in the measurement of neutrino oscillations and briefly describes the scope of some new planned experiments. Contributions include a theoretical introduction by Stephen Parke from FNAL, as well as a
