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1. Cosmological parameters from "standard candles" 2. Type Ia supernovae as "standard candles"; 3. High-redshift supernova data; 4. Fits to QM and QA; 5. Systematic uncertainties and cross-checks; 6. Results and error budget; 7. Conclusions and discussion; References; Bias is Complicated; Abstract; 1. Introduction; 2. Ruling out simple biasing; 3. Measuring $r(k)$; 4. Conclusions; Acknowledgements; References; Solar Neutrinos: an Overview; Abstract; 1. Introduction; 2. Standard model predictions; 3. Three solar neutrino problems; 4. Uncertainties in the flux calculations 5. How large an uncertainty does helioseismology suggest? 6. Fits without solar models; 7. Neutrino oscillations; 8. Discussion and conclusion; Acknowledgements; References; Radiochemical Solar Neutrino Experiments and Implications; Abstract; 1. Introduction; 2. General considerations about radiochemical experiments; 3. Homestake chlorine experiment; 4. Gallium for pp-neutrino detection; 5. Gallex; 6. Sage; 7. Interpretation and implications; 8. Outlook; References; Evidence for Neutrino Oscillation Observed in Super-Kamiokande; Abstract; 1. Introduction; 2. Super-Kamiokande detector 3. Atmospheric Neutrinos 4. Conclusion; Acknowledgements; References; Neutrino Oscillations; Abstract; 1. Introduction; 2. Atmospheric neutrinos; 3. Solar neutrinos; 4. Accelerator neutrinos; 5. Neutrino mass-mixing patterns; 6. Conclusions and prospects; Acknowledgements; References; Primary Cosmic Rays Antiprotons and Atmospheric Neutrinos; Abstract; 1. Introduction; 2. Primary spectra; 3. Atmospheric neutrinos; 4. Antiprotons; Acknowledgement; References; High Energy Cosmic Neutrinos; Abstracts; 1. Introduction; 2. Science goals; 3. High energy neutrino observatories 4. Future arrays with kilometer dimensions

Sommario/riassunto

It is generally felt in the cosmology and particle astrophysics community that we have just entered an era which later can only be looked back upon as a golden age. Thanks to the rapid technical development, with powerful new telescopes and other detectors taken into operation at an impressive rate, and the accompanying advancement of theoretical ideas, the picture of the past, present and future Universe is getting ever clearer. Some of the most exciting new findings and expected future developments are discussed in this invaluable volume. The topics covered include the physics of the early U
