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Nota di contenuto	CONTENTS ; Mini-Courses on Basics ; Lattice Field Theory and SU(N) Gauge Theories ; 1 Introduction ; 2 Lattice calculations ; 3 The physics of SU(N) gauge theories ; 4 Some final remarks ; References ; CHAIRMAN: M. TEPER ; Symmetries and Quasi-Particles in Hot QCD ; 1 Introduction 2 Qualitative picture of the transition 3 Global symmetries order parameters and the phase transition in QCD ; 4 Canonical Z(N) symmetries in SU(N) gauge theory ; 5 Forces and screening in the plasma ; 6 A quantitative method: perturbation theory and dimensional reduction 7 Dimensional reduction at work 8 Flux of quasi-particles as seen by spatial Wilson and 't Hooft loops ; 9 Epilogue ; 10 Suggestions for further reading

; References ; CHAIRMAN: C.P. KORTHALS ALTES  
 ; Physics of QCD Instantons ; 1 Introduction  
 ; 2 Instantons and chiral symmetries  
 3 What instantons can do: a brief summary  
 4 Two-point correlation functions: T decays  
 ; 5 Three-point correlators: the pion form-factor  
 ; 6 Instantons at large  $N_c$  ; 7 The RHIC puzzles  
 ; 8 Quantum mechanics of the glue in vacuum and high energy  
 collisions ; 9  
 Acknowledgments  
 CHAIRMAN: E. SHURYAK Confinement and Duality  
 ; 1 Confinement: an overview ; 2 Confinement of  
 Magnetic Flux ; 3 Duality Sources and Fluxes  
 ; 4 Duality and Confinement ; References  
 ; CHAIRMAN: M. STRASSLER  
 Probing Grand Unification Through Neutrino Oscillations Leptogenesis  
 and Proton Decay

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Sommario/riassunto

In August/September 2002, a group of 78 physicists from 50  
 laboratories in 17 countries met in Erice, Italy, to participate in the 40th  
 Course of the International School of Subnuclear Physics. The purpose  
 of the School was to focus attention on the theoretical and  
 phenomenological developments in gauge theories, as well as in all the  
 other sectors of subnuclear physics. Experimental highlights from the  
 most relevant sources of new data were presented and discussed,  
 including the latest news on theoretical developments in quantizing the  
 gravitational forces. This volume constitutes the procee

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