# STRONG INTERACTIONS OF HADRONS AT HIGH ENERGIES

V. N. Gribov was one of the creators of high energy elementary particle physics and the founder of the Leningrad school of theoretical physics. This book is based on his lecture course for graduate students. The lectures present a concise, step-by-step construction of the relativistic theory of strong interactions, aiming at a self-consistent description of the world in which total hadron interaction cross sections are nearly constant at very high collision energies. Originally delivered in the mid-1970s, when quarks were fighting for recognition and quantum chromodynamics had barely been invented, the content of the course has not been 'modernized'. Instead, it fully explores the general analyticity and cross-channel unitarity properties of relativistic theory, setting severe restrictions on the possible solution that quantum chromodynamics, as a microscopic theory of hadrons and their interactions, has yet to find. The book is unique in its coverage: it discusses in detail the basic properties of scattering amplitudes (analyticity, unitarity, crossing symmetry), resonances and electromagnetic interactions of hadrons, and it introduces and studies reggeons and, in particular, the key player – the 'vacuum regge pole' (pomeron). It builds up the field theory of interacting pomerons, and addresses the open problems and ways of attacking them. This title, first published in 2009, has been reissued as an Open Access publication on Cambridge Core.

Vladimir Naumovich Gribov received his Ph.D. in theoretical physics in 1957 from the Physico-Technical Institute in Leningrad, and became the head of the Theory Division of the Particle Physics Department in 1962. From 1971, when the Petersburg (Leningrad) Institute for Nuclear Physics was organized, Gribov led the Theory Division of the Institute. In 1980 he became Head of the particle physics section of the Landau Institute for Theoretical Physics, Moscow. From 1981 he regularly visited the Research Institute for Particle and Nuclear Physics in Budapest where he was a scientific adviser until his death in 1997. Vladimir Gribov was one of the leading theoretical physicists of his time, who made seminal contributions in quantum electrodynamics, neutrino physics, non-Abelian field theory, and, in particular, the physics of hadron interactions at high energies.

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Gribov Lectures on Theoretical Physics

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