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Sommario/riassunto	Quantum Chromodynamics (QCD) describes the interactions between elementary quarks and gluons as they compose the nucleons at the heart of atomic structure. The interactions give rise to complexity that can only be examined via numerical simulations on supercomputers. This work provides an introduction to the numerical simulations of lattice QCD and establishes new formalisms relevant to understanding the structure of nucleons and their excited states. The research opens with an examination of the non-trivial QCD vacuum and the emergence of “centre domains.” The focus then turns to establishing a novel Parity-Expanded Variational Analysis (PEVA) technique solving the important problem of isolating baryon states moving with finite momentum. This seminal work provides a foundation for future calculations of baryon properties. Implementation of the PEVA formalism discloses important systematic errors in conventional

calculations and reveals the structure of nucleon excited states from the first principles of QCD for the first time.