A holographic Schrodinger Equation for hadrons

Abstract: Many fascinating ideas of particle theory research, such as color confinement, hidden symmetries, supersymmetry as well as the intriguing holographic principle which conjectures that the information content of some quantum theories in 4-dimensional flat spacetime can be encoded in higher dimensional gravitational theories, are usually encapsulated in sophisticated mathematics, leaving few opportunities to introduce them to undergraduates. The holographic Schrodinger Equation offers such an opportunity. It is as simple as the ordinary Schrodinger Equation, and yet fully relativistic, with its color confining potential being uniquely fixed by specific realizations of conformal symmetry breaking and the holographic principle. Furthermore, its supersymmetrization leads to a unified description of mesons and baryons as supersymmetric partners. The holographic Schrodinger Equation offers a starting point for an impressively successful phenomenology of hadrons.

Short Bio: Ruben Sandapen is an associate professor of physics at Acadia University. He obtained his PhD in theoretical particle physics from the University of Manchester, UK. His research interests include quantum chromodynamics, the phenomenology of hadrons, and holographic dualities. He has previously taught at Mount Allison University and the Universite de Moncton.