Abstract:

We review some selected results within the tensor-pomeron and vector-odderon model of soft high-energy proton-proton scattering and central exclusive production of meson and baryon pairs in proton-proton collisions. We discuss the theoretical aspects of this approach and consider the phenomenological implications in a variety of processes at high energies, comparing to existing experimental data. We consider the diffractive dipion and dikaon production including the continuum and the dominant scalar and tensor resonance contributions as well as the photoproduction processes. The theoretical results are compared with existing STAR, CDF, CMS experimental data and predictions for planned or current experiments, ALICE, ATLAS, LHCb, are presented. We address also the possibilities for the future studies.