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### **High-energy hadron physics at J-PARC**

KAZUHIRO TANAKA, Juntendo University

Model-independent informations on the internal structure of the hadrons, including the compositions of the mass, momentum, and spin of the nucleon in terms of the quark and gluon degrees of freedom, are dominated by those obtained through the parton distribution functions which are deduced from the measurements of the hard processes. This is based on the comparisons of experimental data of the various high-energy scattering cross sections for the hadrons with the corresponding theory predictions expressed by the parton distribution functions (QCD factorization formulas) over wide kinematical range. In particular, the high-intensity beams at J-PARC energies allow the detailed studies of not only inclusive processes but also exclusive processes in the nucleon-nucleon scatterings, nucleon-pion scatterings, etc. The relevant J-PARC processes include the unpolarized and polarized Drell-Yan processes, the exclusive productions of lepton pair, the exclusive 2-to-2 processes, etc. It is known that most of those J-PARC processes are described by the extended versions of the QCD factorization formulas which are associated with the higher twist parton distribution functions, the transverse-momentum-dependent parton distribution functions, the generalized (off-forward) parton distribution functions, the light-cone distribution amplitudes, etc. We discuss the corresponding QCD factorization approaches for the relevant high-energy inclusive and exclusive processes at J-PARC, and novel aspects on the internal structure of the hadrons and the interplay of soft and hard QCD mechanisms, which are expected to be revealed by those experiments.