8.12 Bose Einstein Correlations "From Within"

by O.V.Utyuzh, G.Wilk, Z.Włodarczyk[1)]

We continued efforts to provide a method to numerically model the so called Bose-Einstein correlations between identical bosonic particles observed in all multiparticle production experiments. We argue that the only proper approach is to first model effects of Bose statistics by properly grouping identical particles in energy and then choose directions of their momenta in phase space using symmetrization property of their wave function [1, 2, 3]. The work is still on the simple "toy model" level.

[1] O.V.Utyuzh, G.Wilk and Z.Włodarczyk; hep-ph/0503046; to be published in Acta Phys. Hung. A - Heavy Ion Phys. (2005)

[2] Bose-Einstein correlations from "within"; O.V.Utyuzh, G.Wilk and Z.Włodarczyk; presented at XXXV Int. Symp. on Multiparticle Dynamics (ISMD2005), Kromerizh, Czech Republic, August 9-15, 2005; hep-ph/0509320

[3] O.V.Utyuzh, G.Wilk and Z.Włodarczyk; hep-ph/0509342; to be published in Nukleonika

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8.13 Parton Distribution in Nuclei

by J.Rożynek and G.Wilk

We show using the model for the parton distribution in nuclei without free parameters, that the nuclear Fermi motion fully accounts for the collective motion of partons in a nuclear medium [1]. The sea parton distributions are described by additional virtual pions in an interacting nucleon in such a way as to reproduce the nuclear lepton pair production data and saturate the energy-momentum sum rule. The influence of Fermi motion changes the nucleon rest energy and consequently shifts the momentum distribution of valence partons inside bound nucleons. Good agreement with the data was obtained.

[1] J.Rożynek, G.Wilk, Phys. Rev. C 71 (2005) 068202

8.14 Parton Transverse Momentum Distribution in the Nuclear Deep-inelastic Region and the EOS

by J.Rożynek

Medium effects in the nucleon structure, namely the changes in the nucleon rest energy and the enhancement of sea quark contribution (simulated with "nuclear pions") modify the transverse parton momentum distribution inside Nuclear Matter (NM). Some predictions for future experimental data in the heavy ion collisions have been obtained essentially without free parameters [1]. The influence of these modifications to the Equation of State (EOS) in NM was discussed [2].

[1] J.Rożynek, Acta Phys. Pol. B 37(2006)95

[2] J.Rożynek, AIP Conf. Proc., American Institute of Physics, New York, Proceedings *in press*

8.15 BFKL Resummation Effects in $\gamma^*\backslash\gamma^* \rightarrow \rho\backslash\rho$

by R.Enberg[1)], B.Pire[1)], L.Szymanowski and S.Wallon[2)]

We calculate the leading order BFKL amplitude for the exclusive diffractive process $\gamma_L^*(Q_1^2)\gamma_L^*(Q_2^2) \rightarrow \rho_L^0\rho_L^0$ in the forward direction, which can be studied in future high energy e^+e^- linear colliders. The resummation effects are very large compared to the fixed-order calculation. We also estimate the next-to-leading logarithmic corrections to the amplitude by using a specific resummation of higher order effects and find a substantial growth with energy, but smaller than in the leading logarithmic approximation. [1]

[1] Eur. Phys. J. C in print, arXiv:hep-ph/0508134

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