HEAVY QUARK PRODUCTION IN PARTON MODEL AND IN QCD

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The cross sections of heavy quark production in pp collision and for their photo- and electroproduction are calculated in the framework of QCD. The virtual nature of the interacting gluons as well as their transverse motion and different polarizations are taken into account. The obtained cross sections exhibit more rapid growth with the initial energy than the parton model predictions and the p_T distributions of produced heavy quarks are more smooth.

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THE MODEL TEST OF UNIVERSALITY IN SECONDARY HADRON PRODUCTION IN HIGH ENERGY pp, ep and e^+e^- INTERACTIONS

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We compare several calculated distributions of secondaries produced in pp, ep and e^+e^- collisions at invariant masses of produced hadrons (after subtracing the "leading" protons) $M_h \approx 90$ GeV, that corresponds to the experimental possibilities of $Sp\bar{p}S$ (or TEVATRON), HERA and LEP. The predictions of three Monte Carlo generators, namely PYTHIA, LEPTO and HERWIG are used. It is shown that the used models do not expect the "universality" of secondary production in different processes and the differences between them possibly increase with the initial energy. However in some cases the difference of distributions obtained from the different processes can be quantitatively small and it can be interpreted as the "universality" in the case of small experimental statistics.

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