



TO WHOM IT MAY CONCERN

Referee's report for the doctoral thesis:

“Measurement of the Longitudinal Proton Structure Function in Diffraction at the H1 Experiment and Prospect for Diffraction at LHC”

by Mr. David Salek

The measurement of the longitudinal proton structure function (F_L^D) in diffractive processes at the electron-proton collider HERA, is a new important and challenging result. It allows to test the ability of perturbative QCD to describe hard diffractive processes, to determine the diffractive gluon density and to explore the impact of higher twist contributions.

In his doctoral thesis Mr. David Salek gives a clear motivation for this measurement in the context of past studies of diffraction at HERA. After a description of the measurement strategy the analysis is presented, at an impressive level of detail, by covering all its important aspects: from the data selection and accuracy of the montecarlo simulation to the background subtraction and final measurement of the diffractive longitudinal structure function. The results obtained for F_L^D are unique and of a high scientific value. They have been presented at the major international conferences in the past two years attracting great interest from the QCD community.

The scope of the dissertation is enlarged, enhancing at the same time its scientific value, with a discussion of the prospects for diffractive studies at the LHC and by the inclusion of two published works, one of a phenomenological (analysis of “geometric scaling” properties in the HERA data) and the other of a detector-related (simulation of fast timing electronics) character.

In conclusion the content of the dissertation, which is very well written, clearly demonstrates the author's ability for creative and diverse scientific work and is, in my opinion, fully adequate in terms of scope, quality and scientific value for the award of the doctoral degree.

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