

Report of supervisor

The dissertation of David Šálek is devoted to a analysis of diffractive deep inelastic interactions at H1 experiment at HERA. First measurements of diffractive reduced cross sections at center of mass energies 225, 252 and 319 GeV were obtained. The measurements have been used to extract the first measurement of the longitudinal diffractive structure function. The obtained results agree well with the NLO QCD fits to previous H1 data.

The dissertation consists of eight chapters, after a short introduction in chapter 2 the deep inelastic scattering at HERA is introduced and in the next chapter motivation and recent results are presented. HERA and H1 detector are described in chapter 4. The details of the measurement and results are presented in chapters 5 to 8. At the end the conclusions and interpretation are discussed. In the first appendix are shown the results of the hadronic final state calibration which was widely used by H1 collaboration and published as H1 note. In the next appendix is summarised the simulation of fast timing electronics and then in Appendix C studies of geometric scaling. Tables of diffractive ep cross sections are shown in Appendix D. The preliminary results of the analysis of the diffractive longitudinal structure function as they were shown in DIS 2009 and DIS 2010 conferences and published in the proceedings are presented in Appendix E.

David Šálek was referring his results many time within H1 diffractive group and whole H1 collaboration where his work was highly appreciated. He obtained the stamp H1 preliminary for his results twice, in years 2009 and 2010.

The presented analysis was shown in many conferences - DIS conferences in 2009 and 2010, HERA LHC workshop at CERN in 2008, low x workshop in Crete in 2008 and Ischia in 2009, conferences Diffraction 2008 and 2010.

The final H1 publication summarising diffractive longitudinal structure function measurement is in preparation and will be published in the autumn this year.

David's work is original and new, his contribution to the final results is overwhelming. He belongs to the best and most responsible students of H1 Collaboration.

During last years I was able to observe how David became real expert in the field of software and analysis, he is now well experienced person in various aspects of work in the field of High Energy Experiments. Last not least he has also very good anticipation for the work in large experimental groups – he was always able to help and advice to others.

I strongly recommend to award to David Šálek PhD degree.

Prague, 1st of September, 2010

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supervisor