



V Praze dne 26. 05. 2021

Posudok školitele diplomovej práce - Jaroslav Štorek

Advisor report on Jaroslav Štorek's diploma thesis

Title:

Studium rovnováhy půvabných mezonů v relativistických srážkách těžkých iontů pomocí Monte Carlo generátoru HYDJET++

Study of equilibration of charm mesons in relativistic heavy ion collisions within Monte Carlo generator HYDJET++

The main topic of Jaroslav's diploma thesis are new simulations with HYDJET++ Monte Carlo event generator for RHIC and LHC energies. In last two decades, the ultra-relativistic heavy ion collisions provided new insights about the new state of nuclear matter - quark gluon plasma (QGP). This matter has properties of perfect liquid and hydrodynamic models are used to describe the collective phenomena in particle production. HYDJET++ combines soft and hard particle production, using PYTHIA generator and hydro-inspired blast wave parametrization. This model was successful to describe many features of experimental data.

In the diploma thesis Jaroslav Štorek has studied three collision systems: Au+Au collisions at 200 GeV and Pb+Pb collisions at 2,76 TeV and 5,02 TeV with new version 2.4 of the HYDJET++ model. The aim of his work was to validate this version with two collision systems and produce the particle spectra for the first time for the top LHC energy. Author produced distributions of p_T spectra and collective flow parameters for several particle types: charged hadrons, D0 meson and J/psi meson. He compared these spectra with recent experimental data. Thesis is clearly and well

written. The main part of the text are chapters 3 and 4, where selection of previous HYDJET++ results and own author`s original results are discussed. During the study Jaroslav Štorek spent one year at University of Oslo as ERASMUS+ student in a group of prof. Larisa Bravina. His results attracted very positive attention of other HYDJET++ developers and candidate will present the results at EPS HEP 2021 conference.

During the preparation of the thesis, Jaroslav was working in very careful and systematic way. The goals of this thesis were fully completed and I propose the grade A (výborně).

doc. Mgr. Jaroslav Bielčík, Ph.D.