

## NUCLEAR AND SUBNUCLEAR PHYSICS

### **Secondary charged particles and nuclear fragments in collisions of high energy atomic nuclei.**

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consultants: prof. RNDr. Stanislav Vokál, DrSc., RNDr. Martin Val'a, PhD.

study form: full time

**Annotation:** Study of the secondary charged particles production and nuclear fragments, their yields, multiplicities, correlations and angular spectra obtained by the same standard emulsion method using different primary nuclei ( $A=1-208$ ), energies ( $E=1-200$  GeV) and impact parameters of colliding nuclei – analysis of experimental data samples of BECQUEREL, EMU01 and Dubna emulsion collaborations. The comparison with proton-nucleus interactions. Search for fluctuations of particles production using the scaled factorial moments method, and other methods. Model calculations using modified FRITIOF and Dubna cascade models, or other theoretical approaches. Comparison of the experimental results with theoretical predictions.

### **Hadron production at LHC in ALICE experiment.**

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study form: full time

**Annotation:** Hadrons produced in proton-proton or nucleus-nucleus collisions carry important information about partonic matter created in these systems. It has been shown that a key experimental variable for studying production of hadrons with various quark composition is an event multiplicity and not colliding system or collisional energy. The thesis will focus on hadron identification using tracking detectors in ALICE experiment and on studying of hadron production as a function of multiplicity in pp and Pb-Pb collisions at TeV energies at the CERN LHC.