

Report of activity

H2020 STRONG NA2-Small-x

Jan Cepila

Czech Technical University in Prague

The group

- Venue

Department of Physics

Faculty of Nuclear Sciences and Physical Engineering

Czech Technical University in Prague

- The people involved

2 senior scientists – Jan Cepila, Jesus Guillermo Contreras Nuno

2 PhD. students – Marek Matas (leaving), Dagmar Bendova

1 Msc. student – Matej Vaculciak

Scientific activities to Task 2*

- Recently, we have developed a procedure to solve BK equation with explicit impact parameter dependence (with running coupling or collinearly improved kernel) and we have published the solution applied to DIS and vector meson production off protons in

D. Bendova, J. Cepila, J. G. Contreras, and M. Matas, Solution to the Balitsky-Kovchegov equation with the collinearly improved kernel including impact-parameter dependence, Phys. Rev. D 100, 054015

- We have extended the solution to nuclear targets using Glauber and using the nuclear initial conditions for BK and we have published the solution applied to DIS in

J. Cepila, J. G. Contreras, and M. Matas, Predictions for nuclear structure functions from the impact-parameter dependent Balitsky-Kovchegov equation, arxiv:2002.11056, sent to PRC

- We have explored the effect of non-linear term from BK to nuclear structure functions

J. Cepila, M. Matas, Contribution of the non-linear term in the Balitsky-Kovchegov equation to the nuclear structure functions, arxiv:2006.16136, accepted to special issue of EPJA (COST THOR white paper)

• * no acknowledgment to NA2 Small-x of STRONG is present in the papers

Scientific activities to Task 4*

- We have developed a model to include subnucleon hot spots into the calculation of vector meson production to predict diffractive (incoherent) production and we have published the solution within EIC kinematic range in

M. Krelina, V.P.Goncalves, J. Cepila, Coherent and incoherent vector meson electroproduction in the future electron - ion colliders: The hot - spot predictions, Nucl.Phys.A 989 (2019) 187-200

(in collaboration with USMCL Valparaiso, Chile and University of Pelotas, Brasil)

Future activities

- Task 4: We plan to extend the hot spot model to DVCS
- Task 2: Contribute to the numerical solution of NLO BK equation using our procedure to solve the equation