

HIJING++ a New Generation of Hadron Interaction Generator for the Future's Nucleus-Nucleus Collisions at High-energies

Tuesday, 29 August 2017 11:00 (30 minutes)

In the high-energy heavy-ion physics community the FORTRAN based HIJING Heavy Ion Jet Interaction Generator code is commonly used, originally developed by Xin-Nian Wang and Miklos Gyulassy [1] – more than 2 decades ago. Although it was intended to describe the heavy-ion collisions occurring at RHIC energies, it has still many applications with today's higher collision energies. However, the technological advancement nowadays makes it clear that the upgrade of the code is getting more and more important. The Budapest–Berkeley–Wuhan collaboration has already started this key development task.

The new, C++ based and soon-to-be-published HIJING++ that we introduce will be the successor of the original HIJING[2]. It will be a state-of-the-art Monte Carlo code with all of the capabilities of the original event generator and much more. It is designed to be future-proof in the sense of computer hardware and software as well.

In this talk we present the current state of the development and give an outlook of the forthcoming physics and computing features. We also present our first predictions for hadron production at the 8.16 TeV c.m. energy in p+Pb collisions [3].

[1] Wang, X-N.; Gyulassy, M. HIJING 1.0: A Monte Carlo Program for Parton and Particle Production in High Energy Hadronic and Nuclear Collisions. *Comput.Phys.Commun.* 1994, 83(307).

[2] Barnaföldi, G.G.; Bíró, G.; Gyulassy, M.; Haranózó, Sz.M.; Lévai, P.; Ma G.; Papp, G.; Wang, X-N.; Zhang, B-W. First Results with HIJING++ in High-Energy Heavy-Ion Collisions. 2017, arXiv:1701.08496

[3] Albacete et al, Predictions for p+Pb Collisions at $\sqrt{s_{NN}}=8.16$ TeV Submitted to Nucl Phys B.

Primary authors: BARNAFOLDI, Gergely Gabor (Wigner RCP Hungarian Academy of Sciences (HU)); BIRO, Gabor (Hungarian Academy of Sciences (HU)); LEVAI, Peter (Hungarian Academy of Sciences (HU)); GYULASSY, Miklos (Columbia University); WANG, Xin-Nian (Lawrence Berkeley National Lab. (US)); PAPP, Gábor (Eötvös University); MA, Guoyang (I); ZHANG, Ben-Wei (Central China Normal University); HARANGOZO, Szilveszter Miklos (Hungarian Academy of Sciences (HU))

Presenter: BARNAFOLDI, Gergely Gabor (Wigner RCP Hungarian Academy of Sciences (HU))

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