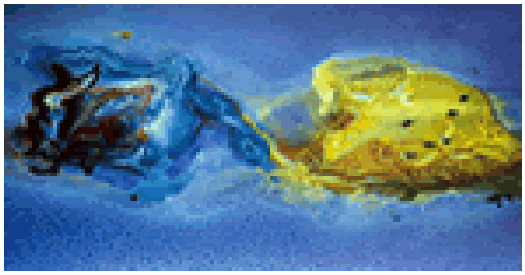

Contribution ID: **220** Type: **Talk**

# Determination of the quark-gluon string parameters from the data on pp, pA and AA collisions at wide energy range using Bayesian Gaussian Process Optimization

*Wednesday, 1 August 2018 17:00 (20 minutes)*

Bayesian Gaussian Process Optimization [1,2,3] can be considered as a method of the determination of the model parameters, based on the experimental data. In the range of soft QCD physics, the processes of hadron and nuclear interactions require using phenomenological models containing many parameters. In order to minimize the computation time, the model predictions can be parameterized using Gaussian Process regression, and then provide the input to the Bayesian Optimization.
In this paper the Bayesian Gaussian Process Optimization has been applied to the Monte Carlo model with string fusion [4,5,6]. The parameters of the model are determined using experimental data on multiplicity and cross section of pp, pA and AA collisions at wide energy range (from SPS to LHC). Principal Component Analysis has been applied to the data and model predictions. The results provide important constrains on the transverse radius of the quark-gluon string ($r_{str}$) and the mean multiplicity per rapidity from one string ($\mu_0$).
The research was supported by Russian Science Foundation under grant 17-72-20045.

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**Session Classification:** Statistical Methods for Physics Analysis in the XXI Century

**Track Classification:** H. Statistical Methods for Physics Analysis in the XXI Century