HAMLET
How to Apply Machine Learning to Experimental & Theoretical PHYSICS
August 19 - 21, 2024
Copenhagen, Denmark

Contribution ID: **33** Type: **Plenary**

Exploring Bottomonium Behaviour at Finite Temperatures: Machine Learning and Lattice QCD

Tuesday, 20 August 2024 10:25 (25 minutes)

We present findings from the FASTSUM collaboration on the behaviour of bottomonium particles (bound states of a bottom quark and its antiquark) at different temperatures. To analyze this, we used three methods: a Maximum Likelihood approach with a Gaussian function for the ground state, the Backus-Gilbert method, and a machine learning technique called Kernel Ridge Regression. Our study uses lattice simulations with 2+1 quark flavours, covering temperatures from 47 to 375 MeV. The findings help us understand how bottomonium particles behave in hot environments, which is important for studying the properties of quark-gluon plasma and the dynamics of heavy quarks in extreme conditions.

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Session Classification: Plenaries & Keynotes