



Contribution ID: 40

Type: **Oral Presentation**

Model bias and parameter optimisation with the example of INCL/ABLA

Monday 22 September 2025 18:05 (20 minutes)

The accuracy (the bias) and precision (the uncertainties) of high-energy spallation models is a key issue for the design and development of new applications and experiments. In the case of the combination of the IntraNuclear Cascade model of Liège (INCL) [1, 2] and the Ablation model (ABLA) [3, 4], we address the problem through two orthogonal approaches, both based on a Bayesian framework.

In the framework of the joined project NURBS, shared between the Swiss National Science Foundation (SNF) and the French National Agency for Research (ANR), we developed an approach to optimise the internal parameter of the model [5] and, on the other hand, we developed a method to estimate the bias of the model [6]. The first approach improve the accuracy and the second quantify the accuracy and the precision of model combination. This will be used to study observable ranging from the double differential neutron production to the hypernuclei fission cross section.

References

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Session Classification: Nuclear Physics Applications

Track Classification: Nuclear Physics Applications