

# XVII Polish Workshop on Relativistic Heavy-Ion Collisions: Phase diagram and Equation of State of strongly interacting matter



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## Modeling resonance spectra in heavy-ion collisions at HADES

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The statistical hadronization model is known to describe very well the yields of particles produced in heavy-ion collisions at LHC, RHIC, and SPS over many orders of magnitude. Recently, we have shown [1,2] that at lower energies, not just yields but also spectra of the most abundant particles containing u and d quarks can be reproduced in the thermal model.

Strangeness, heavy compared to the temperature and rarely produced, is not expected to thermalize at low energies and cannot be used as additional observable in this study. Instead, further insights can be gained from baryonic resonances, which are excited in large amounts in the system at high  $\mu_B$ .

In this talk, I will discuss  $\Delta(1232)$  production using the thermal Monte Carlo event generator THERMINATOR 2, where we have implemented a finite width of the resonance based on the S-matrix theory [3]. Model predictions will be confronted with transport simulations and the unique set of experimental results published by the HADES collaboration [4].

### References

- [1] S. Harabasz *et al.*, *Phys.Rev.C* **102** (2020) 5, 054903
- [2] S. Harabasz *et al.*, *Phys.Rev.C* **107** (2023) 3, 034917
- [3] P. M. Lo *et al.*, *Phys.Rev.C* **96** (2017) 1, 015207
- [4] J. Adamczewski-Musch *et al.* (HADES), *Phys.Lett.B* **819** (2021) 136421

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