



Contribution ID: 182

Type: Oral

## Universality of scaled particle spectra in ultrarelativistic heavy-ion collisions

We find a remarkable universality in the experimentally observed transverse momentum spectra in ultrarelativistic nuclear collisions, obtained by removing the global scales of total particle number and mean transverse momentum. This scaling behavior breaks down at large transverse momentum and for very small systems, such as those produced in p-p collisions. We further demonstrate that this universal scaling behavior is compatible with hydrodynamic predictions and, thus, may indicate the onset of a hydrodynamic regime. Our results pave the way for further theoretical and experimental investigations of this novel scaling phenomenon to bring to light the collective and non-collective behavior encoded in the transverse particle spectrum of different collision systems.

This presentation is based on 2406.15208.

### Category

Theory

### Collaboration (if applicable)

The ExTrEMe Collaboration

**Primary authors:** Dr VEIGA GIANNINI, Andre; MUNCINELLI, Cicero Domenico; DOBRIGKEIT CHINEL-LATO, David (Austrian Academy of Sciences (AT)); Dr GARDIM, Fernando (Federal University of Alfenas); DENICOL, Gabriel (Universidade Federal Fluminense); TORRIERI, Giorgio (IFGW, Unicamp); Prof. LEITE NORONHA, Jorge Jose (University of Illinois at Urbana-Champaign); TAKAHASHI, Jun (University of Campinas UNICAMP (BR)); Prof. WILLIAM LUZUM, Matthew (University of São Paulo); Prof. NUNES DA SILVA, Tiago Jose (Universidade Federal de Santa Catarina)

**Presenter:** Dr GARDIM, Fernando (Federal University of Alfenas)

**Track Classification:** Collective dynamics & small systems