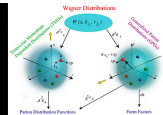
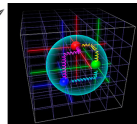
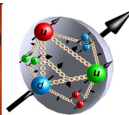
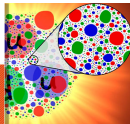


spectroscopy in decays & in femtoscopic correlations: introduction

Elisabeth Niel (CERN → LLR) & Michael Winn (IRFU)



INTENSITY

frontier



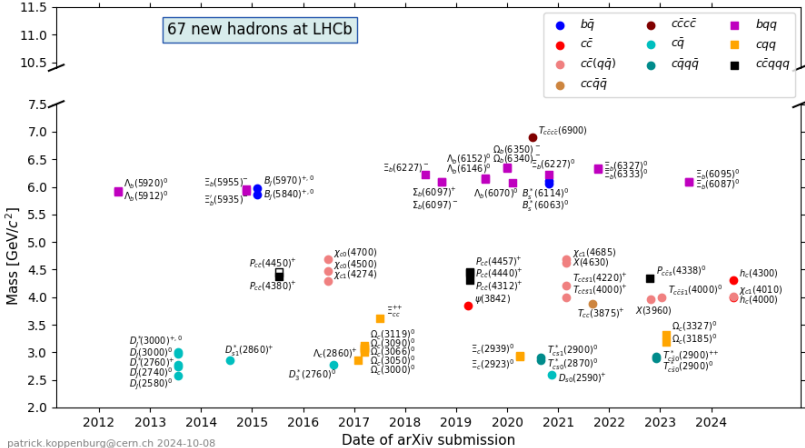
GDR-INF

Gluodynamics



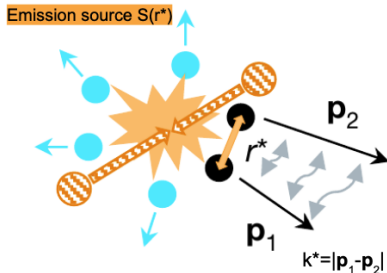
Physique des 2 Infinis et des Origines

Context Spectroscopy



- ▶ large number of discoveries
- ▶ many structures at threshold, precise understanding often not yet achieved

Context Femtoscopy



1. **Source geometry Input**
2. **Measure correlation function $C(k^*)$**
→ Study hadron-hadron interaction

$$C(k^*) = \int S(r^*) |\psi(r^*, k^*)|^2 d^3r$$

adapted ALICE illustration, see Nucleus talk M. Winn 2021

- ▶ ALICE, in particular TU Munich with Laura Fabietti as leader, inverted logic of femtosopic studies
 - universality of source size
 - learn about hadron-hadron interaction otherwise inaccessible

Femtoscscopy with exotica

- ▶ logic inversion can be also applied in charm sector or even beauty sector
→ learn about systems above threshold entails information whether attractive, repulsive and can even tell about bound state below threshold
- ▶ correlation function measurement as such innocent
- ▶ however:
transfer from correlation function to infer hadron-hadron interaction involves a number of assumptions
- ▶ Goal of this workshop:
understand where femtoscopy can be 'better' or completely different information than 'classical' spectroscopy via amplitude analysis
understand assumptions in femtoscopy and in amplitude analysis and how to verify them
limitations of the current state of the art conceptually and experimentally
→ learn whether we can test hadronisation itself with femtoscopy

Femtoscscopy with exotica in LHCb

- ▶ Femtoscopy in charm-charm sector proposed for ALICE 3, see LOI
- ▶ LHCb U1 has already now similar or better statistical power
- ▶ use this potential for spectroscopy if useful

Workshop dinner

- ▶ please confirm your presence: [link](#)