

WPCF 2023 - XVI Workshop on Particle Correlations and Femtoscopy & IV Resonance Workshop 2023



Contribution ID: 18

Type: **Contributed**

Femtoscopic correlations of lightest nuclei

Friday, 10 November 2023 12:15 (15 minutes)

Light nuclei are abundantly produced in relativistic heavy-ion collisions. We derive a formula of the femtoscopic correlation function of the lightest nuclei, which include protons, deuterons, tritons, helium 3. As the correlations are generated simultaneously with the bound state formation, the source function of a given light nucleus, which enters the correlation function, non-trivially depends on its mass number. This fact allows one to distinguish various production mechanisms of the nuclei. The correlation functions also carry information on production unstable nuclei like lithium 4.

The talk is based on a series of publications:

S. Bazak and St. Mrówczyński,

Production of ${}^4\text{Li}$ and p - ${}^3\text{He}$ correlation function in relativistic heavy-ion collisions, European Physical Journal A 56, 193 (2020)

St. Mrówczyński and P. Słoń,

Hadron-Deuteron Correlations and Production of Light Nuclei in Relativistic Heavy-Ion Collisions, Acta Physica Polonica B 51, 1739 (2020)

St. Mrówczyński and P. Słoń,

Deuteron-Deuteron Correlation Function in Nucleus-Nucleus Collisions, Physical Review C 104, 024909 (2021)

St. Mrówczyński,

Production of light nuclei at colliders - coalescence vs. thermal model, European Physical Journal Special Topics 229, 3559 (2020)

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Session Classification: Day 5 - Morning