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Constraining the hadronic phase in light-ions with resonance measurements with ALICE

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Hadronic resonances are a valuable tool for studying the strongly interacting matter created in relativistic heavy-ion collisions. Their short lifetimes make them sensitive probes of the late hadronic stage, where competing rescattering and regeneration processes can modify momentum and azimuthal distributions. Rescattering of decay daughters can alter their momenta, preventing the reconstruction of the parent resonance, while regeneration through pseudo-elastic interactions can enhance the signal. These effects can modify final-state observables such as spectra, yields, and flow harmonics in the hadronic phase. Light-ion collisions (OO and Ne–Ne) can bridge small (pp) and large (Pb–Pb) collision systems. A comparative study of short-lived (K^0_s) and long-lived (ϕ) resonances offers an ideal probe of the onset and duration of the hadronic phase and the underlying interaction dynamics.

This contribution will present new ALICE results on K^0_s and ϕ meson production in light-ion collisions, including their yields, transverse momentum spectra, flow harmonics, and nuclear modification factors. The measurements are compared with previous results and state-of-the-art model predictions, providing new insights into the properties of the hadronic medium and the mechanisms governing resonance production.

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