



Contribution ID: 773

Type: Oral

## The NA60+ experiment at the CERN SPS

A new fixed-target experiment, NA60+, is proposed at the CERN SPS to measure muon pairs in the centre-of-mass energy range from 6 to 17 GeV across various collision systems, from Pb–Pb to p–Be. Its physics scope spans topics from thermal radiation, to chiral symmetry restoration, strangeness, and charm production.

The experimental apparatus comprises a vertex spectrometer and a large-acceptance muon spectrometer. A vertex telescope with ultra-thin, large-area Monolithic Active Pixel Sensors (MAPS) is positioned close to the target and operates within a dipole magnetic field. Downstream, the set-up includes a muon spectrometer based on large-area gaseous detectors and a second dipole magnet. A high-intensity beam grants access to rare observables that have been scarcely explored.

The physics program includes searching for chiral symmetry restoration through  $\rho$ - $a_1$  mixing, studying the phase transition order at high baryochemical potential via a caloric curve, and detecting deconfinement onset through  $J/\psi$  suppression. Additionally, NA60+ will measure medium transport properties using open charm states and study hadrochemistry through strange hadrons and hypernuclei production.

A technical proposal is being prepared for submission to the SPS committee in May 2025, with data taking targeted to begin in 2029/2030.

This talk will cover the technical aspects of the experimental apparatus, the R&D progress, and the physics program and its potential impact alongside other experiments.

### Category

Experiment

### Collaboration (if applicable)

NA60+

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**Track Classification:** Detectors & future experiments