



Contribution ID: 1040

Type: Poster

## Measurement of a caloric curve and chiral symmetry restoration with the NA60+ experiment at the CERN SPS

The high-intensity beams provided by the CERN SPS in a wide energy interval offer a unique opportunity to investigate the region of the QCD phase diagram at high baryochemical potential. The NA60+ experiment, proposed for taking data with heavy-ion collisions at the SPS in the next years, has a strong potential for investigating the QCD phase diagram via measurements of electromagnetic probes in a beam-energy scan of Pb-Pb and p-A collisions in the interval  $\sqrt{s_{NN}} = 6-17$  GeV.

In this talk the physics program of the NA60+ experiment on thermal dimuons will be described.

At beam energies below top SPS energy, the baryon density becomes maximal and its effect on  $\rho$  meson broadening can be measured by NA60+ with utmost precision.

NA60+ will have sensitivity to the  $\rho$ - $a_1$  chiral mixing mechanism, which provides access also to the properties of the  $a_1$  by exploring the thermal dimuon mass spectrum in the range  $1 < M < 1.4$  GeV.

For dimuon masses above 1.5 GeV, the temperature of the emitting source can be directly extracted by a fit of the mass spectrum. The experimental program of NA60+ plans to determine for the first time a caloric curve by measuring the temperature vs beam energy, with particular focus on  $\sqrt{s_{NN}} < 10$  GeV, which is believed to be essential to map out the phase transition regime at high  $\mu_B$ .

Finally, the competitiveness and complementarity of NA60+ in the landscape of the experiments foreseen at other facilities in the next decade will be discussed.

### Category

Experiment

### Collaboration (if applicable)

NA60+

**Author:** USAI, Gianluca (Universita e INFN, Cagliari (IT))

**Presenter:** USAI, Gianluca (Universita e INFN, Cagliari (IT))

**Session Classification:** Poster session 2

**Track Classification:** Electromagnetic probes