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STATUS AND PLANS OF THE NA49 P+P AND P+A PROGRAMME

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In a preceding status report of October 2005 /1/ the situation concerning available data sets, the linking of hadron-hadron, hadron-nucleus and nucleus-nucleus interactions in the proposed physics analysis programme, and, based on this analysis, the possibilities of an opening towards an improved, model independent understanding of the sector of soft hadronic interactions have been described.

The physics programme and its conclusions as outlined in this report are still fully valid for the actual work. In the past couple of years three very detailed papers have been published containing new results which go far beyond existing studies both in statistical and systematic precision, and in phase space coverage. This concerns papers on pion production in p+p interactions /2/ and p+C collisions /3/, as well as a very detailed discussion of all aspects of p+C interactions on the level of data interpretation /4/.

This study of pion production has been extended to p+Pb collisions in five bins of centrality and to peripheral Pb+Pb interactions. Final data are now available for all these reactions and corresponding publications are in preparation.

The aim is throughout to maintain the standard concerning the extracted cross sections as defined by the quoted publications and to complement the data papers by corresponding discussion papers making full use of the new possibilities in precision and completeness offered by the new data sets.

In the presentation /5/ at the open session of the committee SPSC-83 some examples of the extraction of model independent information can be found, in particular concerning the final state Coulomb interaction and the extraction of the spectator fragmentation in Pb+Pb interactions. Using both, p+Pb and Pb+Pb collisions an internally consistent picture of the high  $p_T$  enhancement in comparison to elementary interactions is obtained, studying the Cronin effect for the first time over a wide region of phase space in both nuclear reactions.

In parallel final data on baryon production in p+p collisions concerning protons, anti-protons and neutrons have been obtained and are being prepared for publication. This line of analysis will be completed by the study of baryon production in p+C, p+Pb and Pb+Pb interactions.

As already stated in /1/ this continued effort will extend well beyond the year 2007. We therefore ask the committee again to support the continuation of this analysis programme with a view to the optimal use, with minimal manpower and budget requirements, of the existing high quality data sets.

/1/ CERN/SPSC 2005-035

/2/ C. Alt et al., Eur. Phys. J. **C45** (2006) 343

/3/ C. Alt et al., Eur. Phys. J. **C49** (2007) 897

/4/ G. Barr et al., Eur. Phys. J. **C49** (2007) 919

/5/ H.G. Fischer, Presentation in the SPSC-83 open session, 4 Oct 2007