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M E M O R A N D U M

To : P.G.Hansen, Chairman of the PSCC
From : J.Bondorf, B.Jakobsson and H.Ryde
Subject : The heavy ion programme at CERN

The heavy ion programme at the SC has been a very successful undertaking since its start in 1979, as it opened up a new field of research in an energy regime, that was earlier not available. At present many research groups are working very actively in this field; in Europe almost exclusively at the GANIL laboratory.

Though it was from the start clearly declared that the heavy ion programme at the SC was to be operated only for a limited time, it is our definite opinion that it would be unwise to close down the possibility of doing heavy ion experiments in this energy range at CERN at this moment. Besides GANIL, the SC is the only facility at present available to European physicists, while a few additional accelerators most probably will be able to deliver such heavy ion beams in the coming years, for example, the Uppsala accelerator system with the CELSIUS-ring planned to become operational at the earliest from 1988.

Furthermore, as the GANIL accelerators are apparently going to run exclusively with heavy ions with fairly large masses, the beams available at the SC form an excellent complement to those at GANIL. Particularly for our projects focused on the properties of nuclear systems with large mass asymmetry the SC beams are the ideal ones.

Several European groups, including the Scandinavian group that we represent, have submitted experimental proposals to GANIL. It appears to us that aspects of nationality play a weighty rôle in the discussions concerning the acceptance or refusal of a proposal. For this reason also, it is thus important that there exists a heavy ion beam in this energy regime at CERN.

After the run in the spring of 1985 we intend to report our results to the Committee and ask for the possibility of a run also during 1986. From our data available to date we see the great importance of additional correlation experiments in studies of mass asymmetric systems. For the high energy community it is worthwhile to point out that processes

studied in intermediate energy, heavy ion collisions are in many respects similar to the processes occuring in the colder parts of colliding ultra-relativistic nuclei. In these ultra-relativistic collisions the colder parts carry important messages on the behaviour of the hot nuclear matter in which one hopes to find quark-gluon plasma.

In conclusion, we urge the PSC-committee to postpone the decision to remove the possibility of performing heavy ion experiments at the SC.