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Autor: Heeringa, W.
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Rapporteur's report, session (F), W. Heeringa:

The first talk in this session was given by Glättli, Saclay, about polarizing nuclei of elements heavier than hydrogen with dynamic methods. The list comprised over 20 nuclides, which have been polarized mainly for measurements of pseudo magnetic moments or for nuclear magnetic ordering studies. The problem of creating free electrons in the various substances was discussed. In this field still a lot of uncertainties and surprises occur. The difficulties inherent to NMR measurements for determining the polarization were briefly discussed. Other methods were also mentioned, upon a question from the audience, namely measuring the nuclear magnetization with a SQUID or employing spin dependent properties of nuclear reactions, e.g. transmission by polarized neutrons.

After this, Arvieux, Saclay, came up with a short note advertising the use of polarized nuclei in heavy-ion nucleus-nucleus collisions with deformed nuclei at high energies. Higher densities can be reached during these collisions when both nuclei are oriented along the beam direction.

The next talk was by Konter, SIN, about brute force polarization. He gave a resumé about the requirements and the methods available to achieve brute-force polarization. The most recent development is the employment of enhanced nuclear refrigeration, which yields a high cooling power below 10 mK. The largest samples and highest polarizations are produced by the solid-state physics community to reach temperatures in the μK-region via nuclear demagnetization. After the talk some questions were asked about nuclear orientation thermometry with ^{60}Co.

The final talk in this session was by Vandeplassche, Leuven, about nuclear polarization by pick-up of polarized electrons. The aim of this work is to study the decay of radioactive isotopes with such short life-times, that they cannot be polarized after on-line implantation, because the spin-lattice relaxation time is longer than the decay time. The solution is to polarize the nuclei before implantation by pick-up of polarized electrons from nickel single crystals. The present problem is that the divergence of the beam after electron pick-up is too large. In the discussion there were questions about the usefulness of this principle to make a polarized source. At present up to 15 nA of polarized beam can be achieved. This can be increased by using more or larger Ni crystals. The divergence problem remains, and anyway one would have to re-ionize in order to make a polarized source.