

OPENING REMARKS

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I would like to welcome you all here for this International Conference on Sector-Focused Cyclotrons and Meson Factories. Certainly one of the great things in modern physics is the development of accelerators; it is at least as impressive as the results that have been obtained with these machines. In fact, when one considers the energies and the intensities which we can reach today, one must stand in awe of the technical progress in the last decades.

I would like to remind you, perhaps without deprecating the reputation of a good friend of mine, that in 1936 Hans Bethe wrote a little note proving that a cyclotron cannot be built with an energy higher than 8 MeV. I am sure we all have such a great appreciation of Hans Bethe that he wouldn't mind my mentioning this fact.

The development is impressive, both in energy and intensity, and one must not forget that both are important. This is why it is especially gratifying to see here a big conference devoted rather more to intensity than to energy. There is a tendency to rush towards the highest attainable energy - a tendency which I highly support - but physics being a wide field should not neglect also the problems at lower energies. There is a tendency in modern physics, perhaps an unfortunate one, towards qualitative discoveries of new facts and a certain neglect of thorough quantitative investigation of the discovered phenomena. Our own experience here at CERN gives an interesting example of the importance of the latter kind of activities: Most important contributions to physics here in Geneva were, in fact, done at the small machine, such as the radioactive decay of the π meson, the accurate measurement of the magnetic moment of the muon, and many others. It was possible because of an unusually good and intense beam of pions, in spite of the fact that new fields of qualitative discovery are open only at very high energies. Much can and should be done at lower energy with good intensities and manageable beams.

Physics is a pyramid with qualitative discoveries at the top, and a broad base below at which these discoveries must be thoroughly investigated. After all, physics is a quantitative science; an exact knowledge of what we see is of utmost importance.

I am always very much impressed by these high intensity machines, in particular by those plans for meson factories which are machines to produce nuclear radiation of high intensity. In some ways they are nuclear x-ray machines since the pion radiation can justly be regarded as a nuclear bremsstrahlung - bremsstrahlung of the nuclear field when protons are decelerated; they are x-ray machines extrapolated into the nuclear field.

I do not want to take too much time with such loose remarks. You have to go to your work. I would like to welcome all of you here and in particular to express our gratification here at CERN that this conference represents such a broad cross-section of physicists and engineers from the whole world, that we have so many people coming, both from the United States and from the Soviet Union, and from many other countries. We are in particular gratified of being host here at CERN because you know that CERN has a double purpose. One is the exploration of the world of elementary particles. The other is to support the international character of science, to emphasize the fact that national or political boundaries play no role, that humanity is one unit in all its endeavours and in particular in the most successful endeavour of our modern civilization: the exploration of the material world.