

average of 1.5×10^{10} polarized protons to 22 GeV with a polarization of 46 per cent. In order to reach this energy, the AGS beam had to negotiate 35 imperfection resonances and four intrinsic resonances. Three experimental teams collected data at 13.2 GeV where the polarization was 65 per cent, and at 18.5 GeV where the polarization was 50 per cent. Both the AGS physicists and the experimental teams are awaiting their next polarized proton running period so as to push on to higher energies and hopefully to unravel some of the yet unexplained depolarization phenomena encountered during the acceleration cycle.

CERN More charm

Just before the CERN Intersecting Storage Rings (ISR) machine was closed in 1984, it was operated in a unique mode, and the accumulated data is still providing interesting results.

Instead of carrying separate beams in its two interlaced rings, in its final study the ISR carried a finely tuned beam of antiprotons in one ring, which collided with a fine jet of protons (hydrogen gas).

In these proton-antiproton annihilations, the selection rules are much less restrictive than for electrons and positrons, so that charmonium (charmed quark bound to a charmed antiquark) states can be studied directly which can only be accessed indirectly at electron-positron machines.

First results (see October 1984 issue, page 335) were on so-called chi states, where the charmonium quarks, in addition to having al-

Snowmass

From 23 June to 11 July, the third major study on future US machines will take place at Snowmass, Colorado, organized by the Division of Particles and Fields of the American Physical Society.

The main aim of Snowmass 86 is to study the design and exploitation of the proposed Superconducting Supercollider, SSC. Since an official proposal now exists, it will provide the major focus for study. Activities will be organized into four areas, accelerator physics (organized by A. Dragt and the Central Design Group), detector design (H. Williams and D. Nygren), physics issues (T. Gottschalk and G. Kane), and non-accelerator physics (D. Ayres). Lee Pondrom of Madison, Wisconsin, is overall organizer.

The accelerator and physics working groups will meet mornings, and the detector and non-accelerator groups afternoons. Most physicists will be active in a morning and an afternoon group, thus providing a mechanism for interaction and communication between the groups.

The first two days will be devoted to presentations about the SSC and related subjects, and the last two days to summaries of progress during the study. At the beginning of the second week the groups will describe what they have chosen to focus on, so participants in other groups will be informed and can provide input. The general emphasis will be on understanding even better how to do physics at high energies and luminosities, and effort will be made to stimulate interactions between accelerator, detector, and physics issues.

The study will build not only on the previous two Snowmass studies and on the very successful work of the Central Design Group, but also on a series of workshops at Oregon, Fermilab, UCLA and Madison designed to provide input to Snowmass 86. Considerable international participation is expected. Those interested in attending should write to Joanne Day, Argonne National Laboratory, Building 362, Argonne, Illinois 60439, USA.

igned spins, rotate around a common axis and thus carry orbital angular momentum. (In the famous J/psi, the quarks have their spins aligned but have no mutual angular momentum.) The high tunability of the circulating antiproton beam energy enabled the experimental team (Annecy / CERN / Genoa / Lyon / Oslo / Rome / Strasbourg

/ Turin) to pinpoint its chi states to within 1 MeV.

Results from scanning the energy range midway between the two chis show signs of a previously unknown charmonium state at 3525 MeV, probably with the charmed quarks carrying orbital angular momentum, but this time spinning in opposite directions.