bate over which of five contending sites to choose (The Federal Republic of Germany said that it would reconsider its support if its site at Drensteinfurt, Westphalia was not chosen) could be settled by not choosing any of those originally proposed. John B. Adams, director of the proposed accelerator, told PHYSICS TODAY that the Meyrin site would be cheaper than the others. The lower cost would be partially because development effort, overhead costs and services could be shared with the existing laboratory, but mainly because the existing proton synchrotron would be used as the injector of the 300-GeV machine and an existing experimental hall would be used as its first research area. With the lower cost there is hope that some of the nations that refused to support the 300-GeV project (such as the UK) might decide to put up the smaller amount required.

John Blewett, head of advanced accelerator design at Brookhaven, believes that pulsed superconducting magnets suitable for a synchrotron ring will be developed within a couple of years; so the new CERN proposal could eventually yield an accelerator of higher energy than Batavia. The magnets could probably be pulsed once every three seconds, Blewett said.

Brookhaven, Lawrence Radiation Laboratory, the Rutherford High-Energy Laboratory, Saclay and Karlsruhe have large programs in producing pulsed superconducting magnets. The problem with them is that although they are lossless during static conditions, they dissipate energy when the field is changing. Because this power must be removed at cryogenic temperatures, expensive refrigerators are required. If power loss can be kept small, the technique is feasible. —GBL

Principle for a Pi–Pi Collision Device Proposed

"Precetron" is the name for a new kind of storage and collision device proposed recently by Bogdan Maglic of Rutgers University and Robert Macek of the Los Alamos Meson Physics Facility (reported in the new Gordon and Breach journal *Particle Accelerators*, April 1970). Unlike the usual storage rings, which provide particle interactions through colliding beams of relatively high intensity, the precetron is a device in which particles interact over their entire orbit; the orbits themselves are precessing—hence the name. Maglic and Macek told us that the new device would produce observable collision rates—up to 1000 per hour—with unstable particles (whose lifetimes are as short as 10^{-8} sec), in addition to low-intensity uncollimated stable-particle systems.

To produce pion–pion collisions an extremely short burst of protons (say 800 MeV) strikes a metal target, which is placed in the center of a 400-kG (pulsed) magnetic field. Pion orbits are almost circles (a few cm radius) tangential to the target. Positive pions precess in one direction, negative in the other. Because of their precession, particles in all orbits, regardless of production angle, will eventually collide. Maglic believes that the precetron would have particle momentum acceptances 10 to 50 times higher than colliding-beam devices and solid-angle acceptances 100 to 10 000 times higher. Because the collision rates are proportional to the square of the intensity, a precetron would have up to $10^{?}$ times the collision rate of a conventional storage ring.

After a while the pions decay into muons, which also precess, and μ–μ collisions occur, too.

Maglic is designing a model to be built at Rutgers employing low-energy electrons and positrons instead of pions. Eventually Macek and Maglic propose to use the precetron at Los Alamos for π–π collisions in the energy region of the rho meson.

A search for electromagnetically produced π–π states (spin 1) over a fairly wide mass range is already under way at the Adone electron–positron storage ring (1.5 GeV/beam) in Frascati, Italy. So precetron will have to prove itself better than an existing Goliath, although the precetron idea appears applicable to collisions of other unstable particles, too; furthermore, the π–π scattering in precetron is not restricted to spin-1 states.

How soon a precetron would be used to do physics experiments is still not clear. Detector considerations may bar its use altogether, Maglic says, but in their journal article the authors suggest possible solutions by outlining a new way of doing experiments. One serious difficulty is separating the variety of π–π and μ–μ processes, and determining energy and momenta of particles produced. Furthermore, backgrounds from pion and proton collisions with nuclei in the production target might swamp the signals coming from π–π and μ–μ processes. —GBL

Lithium-drifted Germanium Measures Gamma Polarization

A simple high-resolution method for measuring the linear polarization of nuclear gamma rays has been developed by groups in Czechoslovakia (J. Honzatko and J. Kajfosz), in Canada (Albert E. Litherland, University of Toronto, George T. Ewan, G.I. Andersson and Gilbert A. Bartholomew at Chalk River Laboratories) and at Johns Hopkins (Yung-Keun Lee, George E. Owen, J.W. Wiggins and R. Wagner). One places a single slab of lithium-drifted germanium so that the gammas strike the edge of the detector. The technique shows promise as a new tool for nuclear spectroscopy.

Compton scattering of linearly polarized gammas occurs preferentially in a plane perpendicular to the electric vector. In a lithium-drifted germanium detector most events contributing to the full-energy peak, for gammas whose energy is greater than 300keV, arise from Compton scattering followed by total absorption of the scattered photon. So if the incoming gammas hit the edge of the polarimeter the counting rate in the total absorption peak will be a maximum when the plane of the detector is perpendicular to the electric vector and a minimum when it is parallel to the electric vector. One can deduce the polarization from the change in counting rate in the total-absorption peak when the plane of the counter is rotated through 90 deg.

The Canadian group has built two such detectors; the larger one is $60\times35\times6.5$ mm. These polarization-sensitive gamma detectors have the high resolution properties of standard lithium-drifted germanium detectors and are relatively simple to use.

Spin-Flip Raman Laser Is Tunable Infrared Source

An intense laser source has been built which, by varying the applied magnetic field, is smoothly and continuously tunable in the infrared range of 10.9–13.0 microns. Other kinds of tunable sources—parametric oscillators—are available in the visible and near-infrared (but not infrared). At the APS Washington meeting late in April, Kumar Patel (Bell Labs) described the experiment. He and Earl Shaw[1] shone a 10-micron CO_2 laser onto an