Brookhaven Associate Director Mel Schwartz – letters of intent for smaller RHIC experiments.

## BROOKHAVEN
## Two large detectors for new Collider

In August the Program Advisory Committee at Brookhaven, along with a Detector Technical Advisory Committee, reviewed updated letters of intent for experiments at the Relativistic Heavy Ion Collider (RHIC) being constructed at the Laboratory.

There were four candidate designs for 'major' detectors: large-scale spectrometer systems, each with a broad physics reach, to absorb the lion's share of the approximately 80 million dollars earmarked for RHIC detector construction.

After a week of committee review, the Laboratory decided to proceed with two such detectors in the first round of RHIC experiments.

STAR, with a time projection chamber to measure hadron production over a large solid angle, was given conditional approval to proceed with a preliminary design. This collaboration is expected to have its design ready for review by next spring, so that construction can begin by the end of fiscal year 1992.

A second detector will emphasize the measurement of leptons and photons, and will involve a realignment of the three remaining large collaborations that submitted letters of intent. Brookhaven physicist Sam Aronson will organize this new effort. A conceptual design for this detector, which will focus on electrons for the lepton pair measurement, will be developed over the next few months.

During the coming year the Program Advisory Committee will consider letters of intent for smaller experiments whose physics objectives should complement those of the larger detectors. Brookhaven Associate Director Mel Schwartz will make a general call for such letters of intent in the near future.

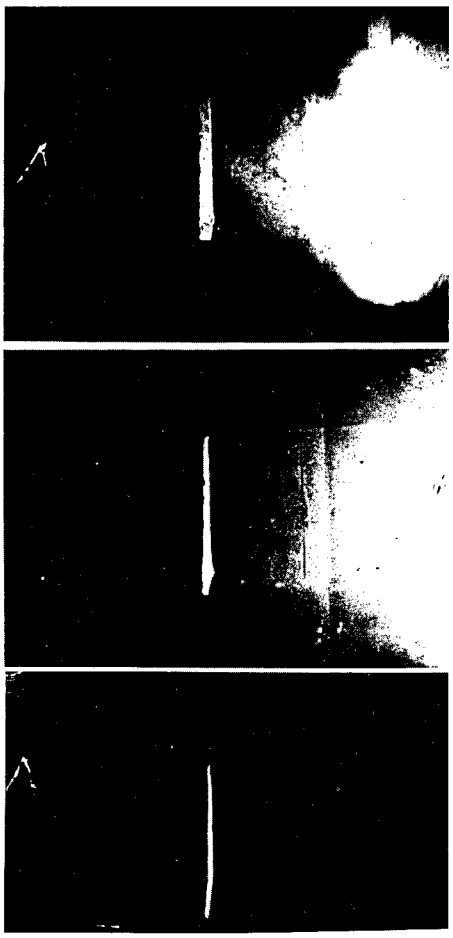
## SERPUKHOV
## Focusing particles by a crystal

With several Laboratories having shown how bent crystals can be used to steer particle beams (May 1990, page 5), a team working at the Institute for High Energy Physics (IHEP) at Serpukhov, near Moscow, has shown how these crystals can also be used to focus particle beams.

The atomic planes and symmetries inside crystals guide ('channel') some of the particles passing through. By using a specially bent crystal, a particle beam can be bent with a power equivalent to that of a huge electromagnet.

Now a team at Serpukhov has demonstrated how such a crystal can also focus a beam. The trick is to machine the exit face of the crystal into an arc, so that the particles channeled in different parts of the crystal are bent by different amounts. However this focusing effect is only one-dimensional.

*Photoemulsion picture of a proton beam at the Institute for High Energy Physics, Serpukhov, near Moscow, transmitted through a bent crystal with a curved exit face. The three images are (from the top) at 0.7, 2 and 3.5 metres behind the crystal, showing the progressive focusing of the bent beam. The top two pictures also show (right) the major portion of the beam passing unaffected through the crystal (0.3 per cent of the particles are bent).*



The crystal used was a 2x15x70 mm plate of silicon bent by 24 milliradians, and the exit face ground into a curved shape by a specially designed machine.

A 2 mm-wide beam of $10^7$ protons per pulse with an angular opening of $\pm$ 0.1 milliradians was focused 3.5 metres from the crystal down to a width of 0.2 mm. The resultant intensity was 3 x $10^5$ protons per pulse (a channeling rate of 0.3 per cent).

The experiment, carried out by physicists from IHEP and from Gatchina, Leningrad, indicates new methods for producing narrow beams and for ejecting beams from internal targets.

## BALKANS
## Building bridges

At a time when upheaval and political unrest in some Balkan countries gives cause for concern, it is good to know that physics, once again, is building bridges between nations.

The new international mobility in the region was marked by a major activity of the Balkan Physical Union – the first Balkan School of Physics, held on the banks of the Bosphorus during the first two weeks of September.

The idea of a scientific union including Albania, Bulgaria, Greece, Romania, Turkey and Yugoslavia was first suggested at a European Physical Society meeting in Helsinki in 1978 in an after-dinner conversation between the late Yugoslav physicist Alexander Milojevic, and Andrei Dorabantu from Romania.

In 1985, when totalitarian regimes were still in power, Milojevic, a man of great humanity and foresight, invited representatives from Balkan countries, including Albania, to a conference in Pristina, Yugoslavia, to promote his idea of a Balkan Physical Union.

The outcome was a protocol for the establishment of the union. Erdal Inonu, then President of the Turkish Physical Society (and now leader of the country's opposition party) telexed 'Even if we Turks cannot be there – our hearts are with you'. The final formal agreement came at a subsequent meeting in Bucharest in 1987.

The programme of this first school in Turkey included introductions to experimental and theoretical high energy physics, nuclear physics, and accelerators and their applications. The full team of lecturers and speakers included Laboratory Directors W. Hoogland (CERN) and A. Wagner (DESY), while W.O.Lock played a well-practiced role of international counsellor.

During the School a round-table discussion reviewed the status of accelerator and particle physics in the Balkan countries and looked at ways of encouraging further collaboration in these and related fields, including the establishment of regional centres of excellence.

The outcome was a recommendation to the BPU Executive Committee to set up a study group including a representative from each country, from CERN and from DESY to:

- survey existing facilities and collaborative efforts, including present relations with international organizations;
- identify specific areas in which enhanced collaboration and joint efforts would be of common benefit;
- make detailed recommendations for action; and
- report back to the BPU Executive Committee.

Meanwhile the first BPU General Conference on Physics was held in Thessaloniki in September. BPU President Gediz Akdeniz and his collaborators look forward to further meetings to reinforce this newly awakened awareness of scientific partnership in the region.

*Participants in the First Balkan School of Physics, held in Istanbul in September. The event was the first major activity of the Balkan Physical Union, covering Albania, Bulgaria, Greece, Romania, Turkey and Yugoslavia.*