

# CHESS director's message

Bob Batterman

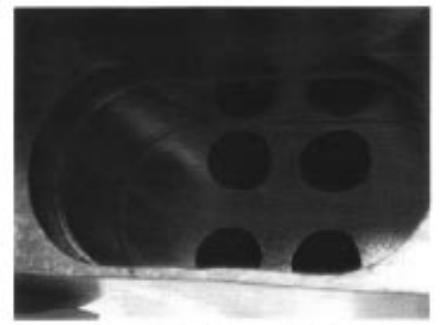
This CHESS *Activity Report* begins a more timely information flow concerning developments at CHESS. Ernie Fontes joined the CHESS staff from Bell Laboratories this past year and is the editor of this communication. Besides informing our users of the capabilities of this laboratory, we hope to encourage feedback so that CHESS may develop to its fullest potential as a synchrotron radiation user facility.

The contributed articles show that the scientific endeavors at CHESS are as strong and numerous as ever. I bring to your attention several major technical developments taking place within CHESS at present. In one way or another, all are affected by the aggressive plans of the Wilson Laboratory to dramatically increase the electron and positron currents stored in CESR. These upgrades are part of a long term project carried out by the High Energy Physics program to explore

the feasibility of building a B-factory, which could ultimately store 1 Amp of current at 8 GeV energy!

In order to deliver more usable x-ray flux from these increased currents, a significant effort is being expended to design accelerator and x-ray optical components that can tolerate the unprecedented heat loads that inevitably accompany the quest for higher currents and photon flux. If the near-term goal of 500 mA current is achieved, the present CHESS wigglers will produce ~32 kilowatts of x-ray power! Designing beamstops, x-ray windows, and other beamline containment components for this powerful beam is no simple matter.

Within the CHESS West laboratory a significant modernization of the original A-line is currently underway. Our high-field 6-pole electromagnetic wiggler is being replaced by a recently constructed 25-pole permanent magnet device, similar to the one in CHESS East. A-line will be totally rebuilt to give us a new tunable doubly-focussed A1 station, similar to the highly successful F1 station. A2 will be a high resolution diffraction station with mirror focussing and a significantly enlarged hutch. With the capability for doubly-focussed wiggler white beam, the A2 station will not only be at the cutting edge of scientific research, but will also provide a premier x-ray heat-

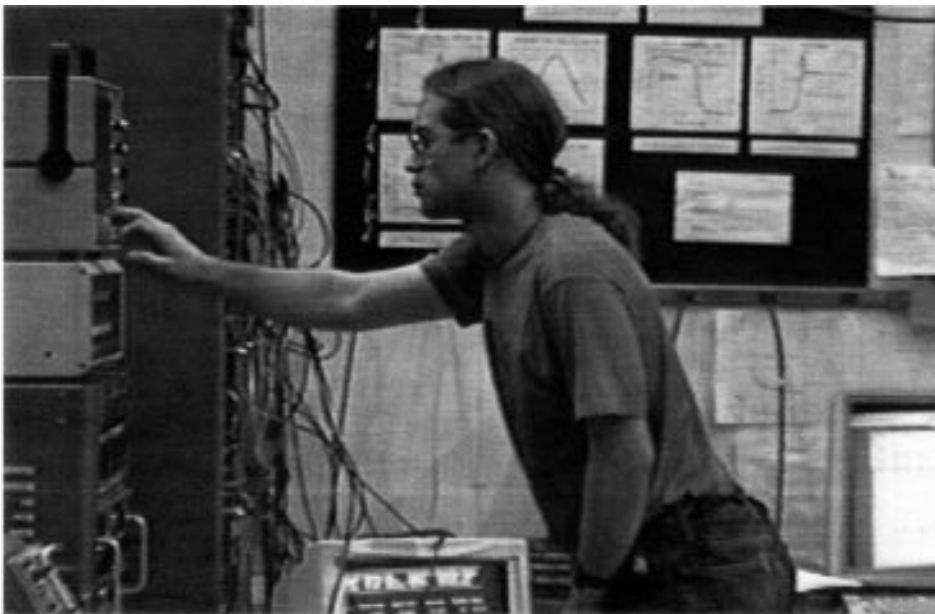


*Water channels inside new A-line copper beamstop, before manifold and vacuum seal brazing.*

load testing facility useful for the development of beamline components for future x-ray sources. Construction is presently underway, and we anticipate full beamline commissioning in June 1993.

On the MacCHESS front, we have recently purchased a Fuji storage phosphor scanner. The successful operation of the F1 station for macromolecular crystallography has raised the level of excitement within CHESS as well as increased demand for beamtime. The Fuji scanner is faster than the Kodak system, enabling users to make the best use of their available time. We are requesting funds from NIH to purchase a second Fuji scanner so that we may replace altogether the Kodak system and further increase data collection efficiency.

The development of new beamlines with unprecedented power levels, the upcoming undulator run, and the prospects for exciting new user and staff research produce a high level of anticipation and excitement at CHESS.



*Bob Batterman*