## The Forward Calorimeter designed and built by UA particle physics experimentalists.

## The Forward Calorimeter Prototype 1993

The first prototype of a new liquid argon/copper sampling calorimeter with thin gaps of active material, originally designed by our group at the University of Arizona in 1992/93 for application in the highly radiative forward region. It showed excellent performance in two electron testbeams, the first at the Brookhaven National Laboratory's AGS with beam energies between 2 and 8 GeV, and the second with high energy electrons (20 to 200 GeV) at CERN. Based on these experiences, this calorimeter design was finally accepted by ATLAS as the baseline for a forward calorimeter after the SSC project was canceled in fall 1993.



(Left) The Forward Calorimeter prototype. (Right) Arizona Undergraduate student Lyle Harlow and group staff member Leif Shaver are shown at the CERN fixed target site during the testing of the ATLAS forward calorimeter prototype.

## The Forward Calorimeter Prototype 1995

After the acceptance of our novel liquid argon calorimeter design in early 1994, we designed and built an extended second prototype, now with full longitudinal containment at the ATLAS design depth (45 cm or about 25 radiation length) and with 374 electrodes. This module was subjected to extensive testbeam studies at CERN's SPS in summer 1995. This time tests concentrated on high energy electrons (10 to 200 GeV). The goal of this experiment was to determine first reliable performance numbers for the electromagnetic signals in the ATLAS forward region, including a sufficient energy and angular resolution. Again, the prototype showed performance beyond expectations.









