

3. MEASUREMENT-AND-COMPUTATION COMPLEX

CENTRAL PROCESSOR COMPUTERS

1992 was the last year when the complex of three computers (PDP-11/70 and two microVAX-II computers), constituting the central FLNP processor, supported physical measurements at the FLNP reactors. One of the microVAX-II computers was incorporated into the Institute's common ETHERNET network and was used for archiving experimental information. In 1993 the PDP 11/70 that was in service for 12 years, was put out of operation. In its place, five SPARCstation-2 and two SPARCserver-2 computers were put in operation. Both microVAX-II computers were combined in a cluster with common disk space of about 1 Gbyte. On the whole, this made possible an essential enhancement of the computational facilities of the laboratory and development of a new archiving and experimental data processing system.

COMPUTER NETWORKS

Work performed in 1992-93 for development of the infrastructure of a local ETHERNET computational network and renewal of the stock of computers resulted in creation in the laboratory of a computational complex distributed according to territory (Fig. 38).

From a structural point of view, the laboratory network is a segment of the common network of the Institute, as one of its segments. This allows laboratory users to have access to the networks of different countries. It gives them the following possibilities: e-mail, Remote Job Entry, File Transfer, TCP/IP service, etc.

Inside the laboratory, the network consists of a series of segments located in the buildings of the IBR-2 reactor and in the laboratory buildings. These buildings are connected with the FLNP measurement-and-computation centre (Building N 119) by LVS optical cables. On the whole, besides the computers indicated above, the network combines over 100 personal computers and computers pertaining to physical installations.

MEASUREMENT SYSTEMS OF PHYSICAL SETUPS

In 1992-93 work was under way to create the hardware and software for the measurement systems of physical setups at the IBR-2 and IBR-30 reactors, and, moreover, in the VME standard.

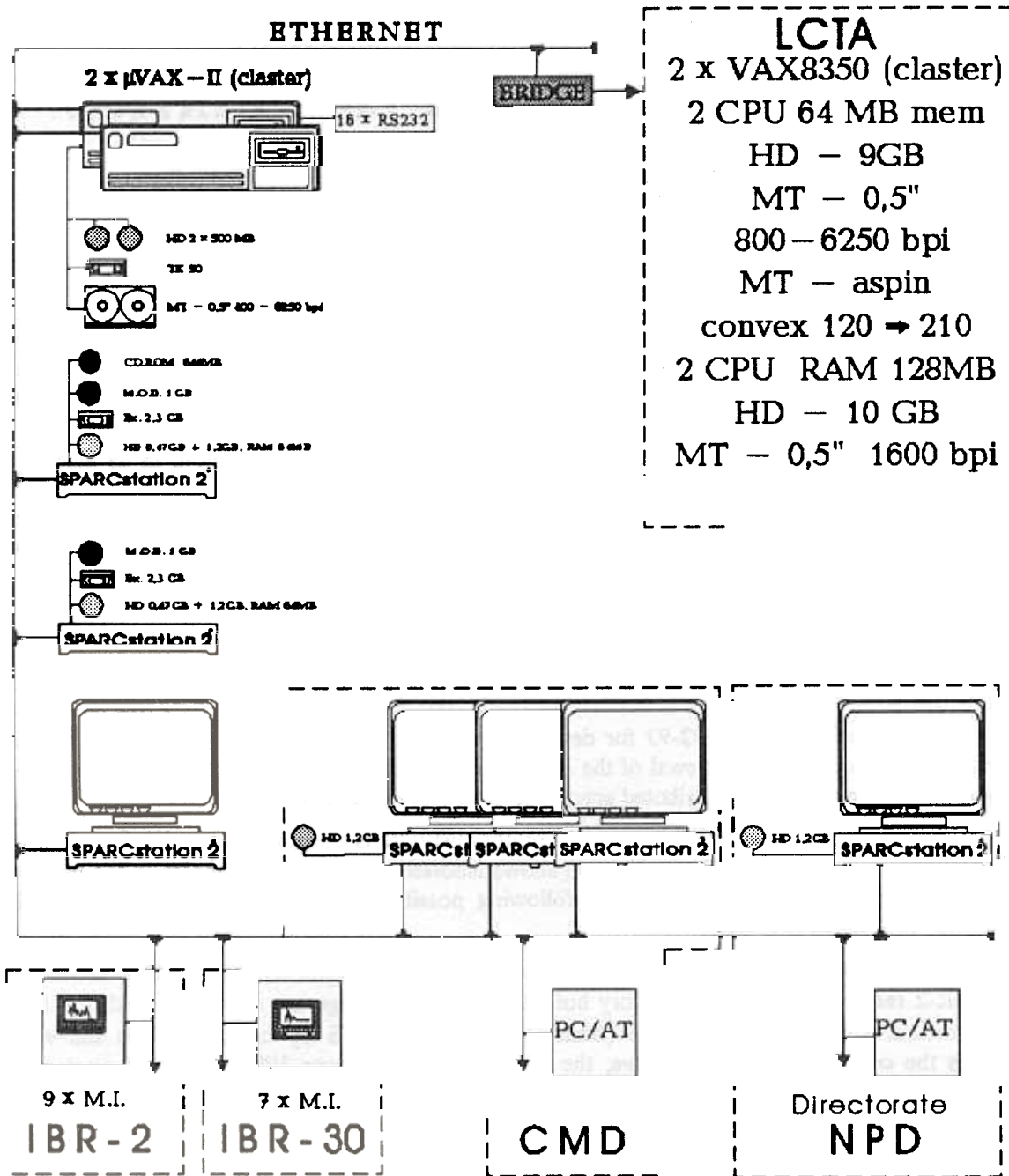


Fig. 38. The FLNP computation complex.

In 1992, in collaboration with specialists from the Technical Centre (Finland) and PINP (Gatchina), work was completed on the measurement module of the new powder diffractometer HRFD on beam N 5 of the IBR-2 reactor, and it was put in operation. The electronics of the multichannel Li-detector of the diffractometer were improved. Electronics were made for the 90° detector. Successful tests were carried out of the prototype of the RTOF correlator based on digital signal processors. The software for the accumulation system in the BITBUS standard was developed and put into service. The software for including a PC-controlled refrigerator in the FDVR system was updated.

The measurement module of the DN-12 diffractometer was created and put in operation. The first measurements with the measurement module, in the VME standard, were carried out at the NSVR installation. A multidimensional MMM (moving measurement module) system has been made and put in operation. The first line of the data acquisition system for the UGRA setup has been completed. The physical installations NERA-PR and KDSOG have been modernized and their equipment updated.

ELECTRONIC EQUIPMENT

New electronic blocks have been developed and constructed in the VME and CAMAC standards: a CAMAC-VME interface based on the KK 009 controller-crate and the software for the crate; a 2 Mb (24; 16) incremental memory block in the VME standard; a 5 kV high-voltage supply in the CAMAC standard; and a coding block for time spectra with 16 detector inputs in the CAMAC standard.