

Control Systems of Executive Mechanisms of Experimental Setups at the IBR-2 Pulsed Reactor

A.I. Kuklin, V.I. Lazin, T.B. Petukhova, A.B. Roganov, A.P. Sirotin

*Frank Laboratory of Neutron Physics,
Joint Institute for Nuclear Research,
141980 Dubna, Moscow Region, Russia*

Abstract

In the given report, the main approaches to design control systems of executive mechanisms for the spectrometers at the IBR-2 reactor are formulated with the purpose of their unification and standardization:

- step motors under control of electronic blocks with a limited set of elementary operations (performing N steps in a given direction) are recommended as drivers of VME-based mechanical systems;
- mechanical systems should have mandatory (movement interval is limited by two sensors) and optional (up to two reference points within the movement interval) elements.

The main parameters used to control each of the executive mechanisms should be available for users:

- executive mechanism number;
- positions of sensors and reference points;
- movement program determining start/stop dynamics of executive mechanisms.

To realize these tasks, the BUSH-VME control block of step motors and SMD-BXA commutator-amplifier of step motors presented in this report, were developed and implemented at the majority of the IBR-2 spectrometers.

To maintain the current operation of mechanical systems, the panel of manual control over the system of spectrometer executive mechanisms was designed.

The control system of executive mechanisms at the YuMO spectrometer on beam 4 at the IBR-2 reactor is presented as an example of realization of the above-mentioned approaches.