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Accelerator control systems reliability at iThemba LABS

The cyclotrons of the iThemba Laboratory for Accelerator-Based Sciences have been in operation for approximately 25 years, and provide particle beams for basic and applied research, hadron radiotherapy and the production of radioactive isotopes. Over the years the control systems of these accelerators have been continuously developed and adapted to meet operational requirements and the impact of evolving technology. In addition, the control systems of the two old electrostatic accelerators have been computerized and totally refurbished in recent years. The implementation of formal reliability procedures within the design of the iThemba LABS accelerator control systems has never been undertaken. Nevertheless, these systems have of course been developed to deliver reliable accelerated particle beams to the diverse communities of users. Past and present experience of delivering reliable beams by the control systems of these accelerators will be presented, together with some examples of current plans to enhance beam delivery.

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