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Patient Safety System for Micro Radiation Therapy at the Australian Synchrotron

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The Imaging and Medical Therapy Beamline at the Australian Synchrotron is progressing with Micro Radiation Therapy studies, to enable the Beamline to be used to treat human patients in the future. These studies provide a number of technical challenges for the Engineering Teams due to the high dose rates accompanying this technique. Trial systems are under development using small rodents as a step along the path to human treatment. This paper provides an overview of the Patient Safety System (PaSS) being developed to support the MRT application on the Medical Therapy Beamline. The system is based on the Beckhoff TwinCAT distributed hardware platform utilising safety I/O in conjunction with a Multipurpose Unit for Synchronisation Sequencing and Triggering (MUSST) developed by the ESRF. In this paper, the key challenge of meeting the timing requirements of 2 ms and maintaining a system that can provide a known Probability of Failure to Dangerous, will be examined

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