THP073

Implementation of a Fast Orbit Feedback System at the ALS *

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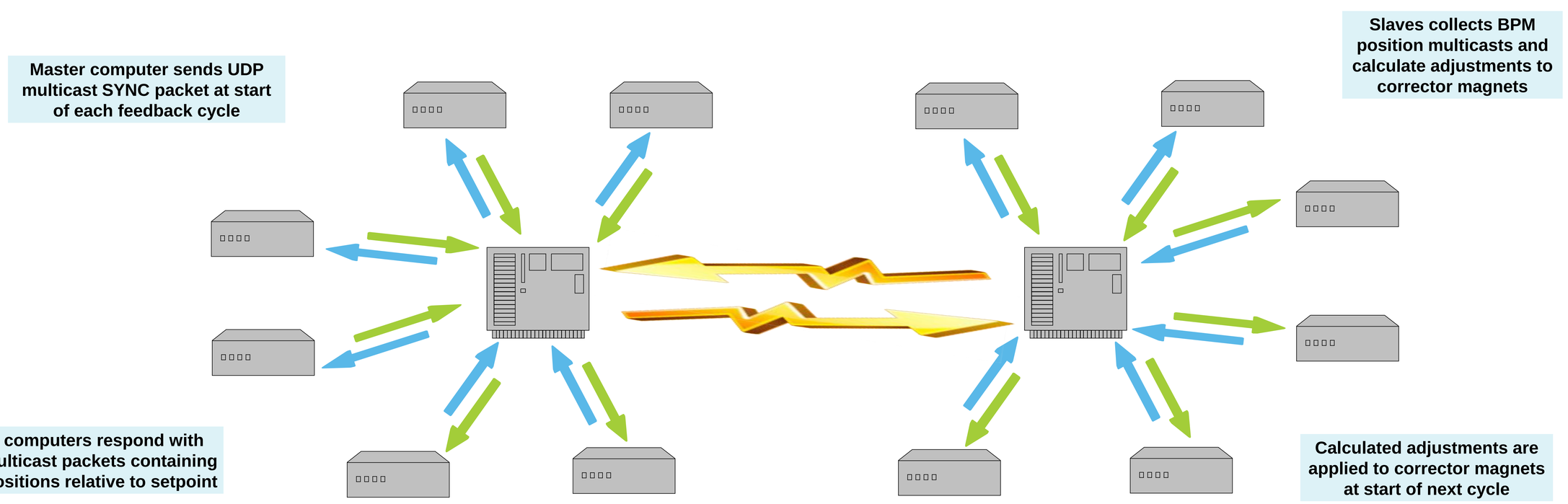
A fast global orbit feedback system has been in user operation at the ALS for over 5 years. This system was constructed using custom control software running in the EPICS environment and off-the-shelf computer and Ethernet network hardware to provide improved beam stability. This paper presents an overview of the feedback system design and implementation, as well as unique issues encountered during commissioning and proposals for future improvements.

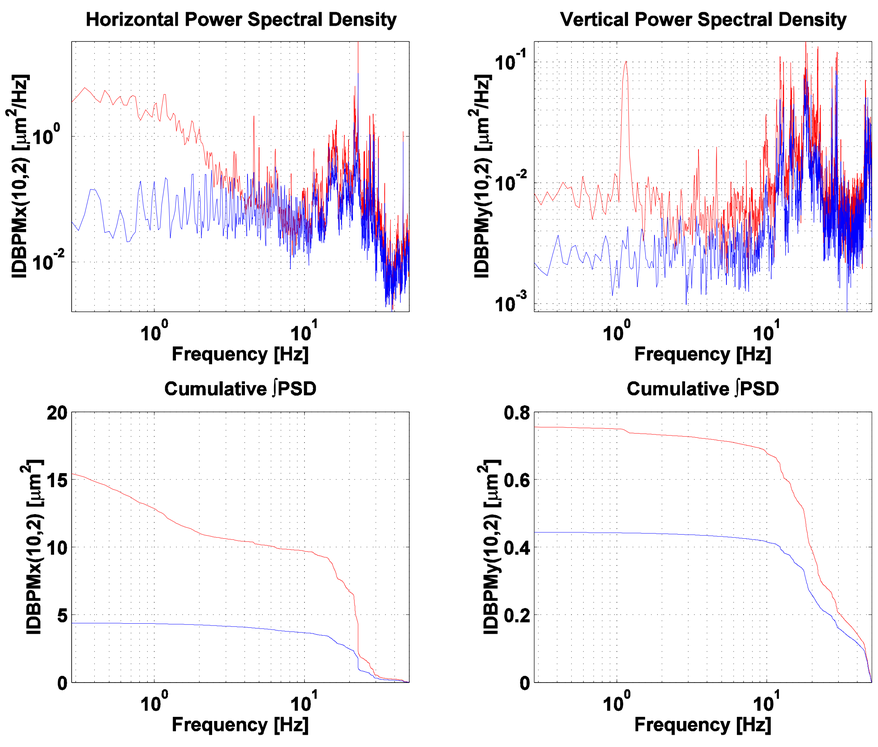


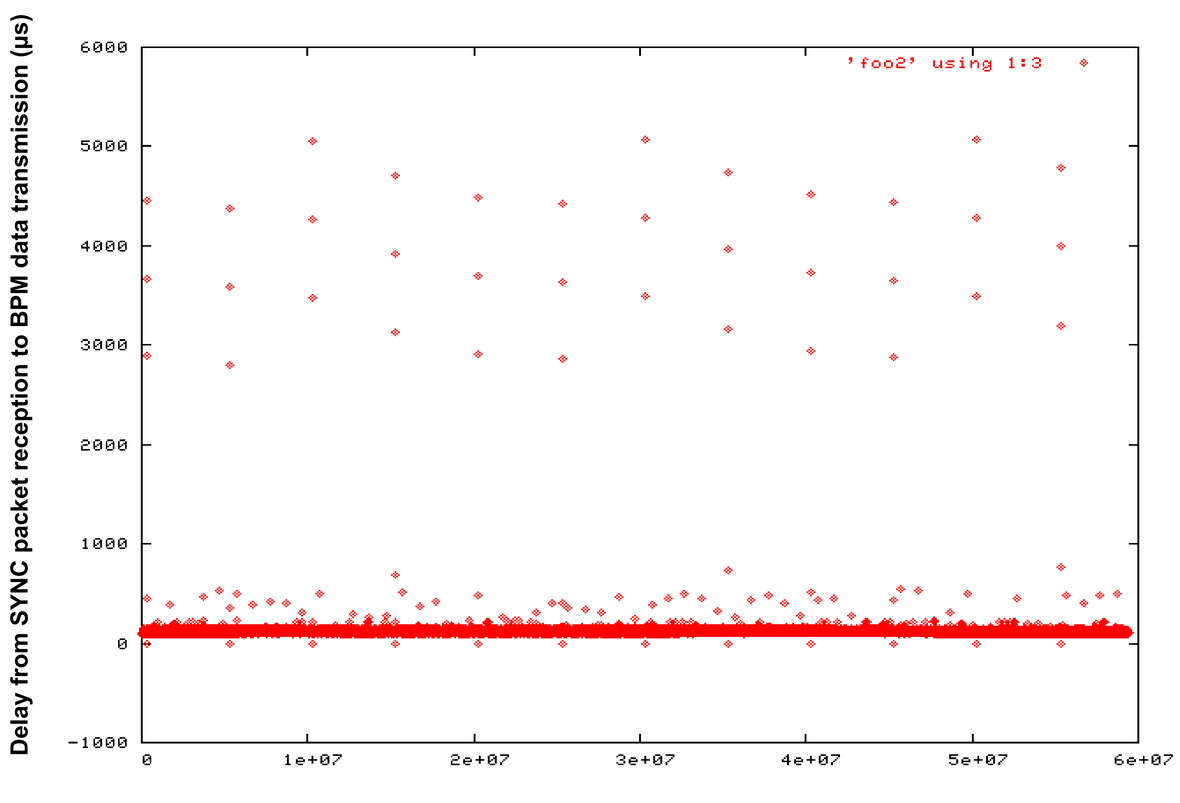
FEATURES

- Off-the-shelf Ethernet
- EPICS controlled
- 1kHz cycle time (2kHz projected)
- BPM data capture for analysis

ISSUES

Auto-negotiation	RESOLVED
Cable propagation	RESOLVED
Router configuration	RESOLVED
CPU availability loss	PENDING





This graph shows network traffic for a single slave of the feedback system operating at 1kHz.

Delays longer than 1000μs result in a lost feedback cycle. The graph shows a loss of CPU availability for about 5000μs due to an unknown cause every 5 seconds. The result is a cluster of 5 to 6 lost cycles.

The cause of this CPU outage is under continuing investigation.

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