Notes from IOTA BPM review

Peter Prieto

Jan-03-2019

Tasks which require small changes to present BPM system:

1. Re-negotiate the BPM requirements and make them less demanding in terms of amount data collected and resolution. These terms would be used until an updated BPM system can be implemented for electrons as well as proton positions.
2. Calibrate the output of each transition module channel using 3 or 4 discrete power levels and measure the outputs looking for linearity response and dynamic range. You can now make a lookup table to correct for offsets and non-linearities. Cross coupling measurements between channels verifying there are no intensity dependencies between the channels.
3. Perform SVD analysis on the closed orbit data to identify beam paraments in the data and non-beam frequencies.
4. Re-design the existing system to eliminate the intensity dependence of the reported position.
5. I recommend not to provide back door access to the experimenters. They should get the data through ACNET. Back door is an engineering tool designed for debugging purposes.
6. Any design of the BPM system for protons ought to have a design review all of its own with agreed upon specifications.