

AUTOMATED ERROR CORRECTION IN OPTICS MODELS USING A NEW METHOD FOR LOCALIZED COMPONENT CALIBRATION

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*M.J. Lee (SLAC). GLAD: A Generic Lattice Debugger. SLAC-PUB-5700, Nov 1991.
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This talk describes research on the development of a new prototype system for automatic component calibration and error correction of beamline optics models. The system analyzes orbit response data to decompose a beamline model into "good" and "bad" optics regions. Each "bad" region is then analyzed independently to correct component calibration errors within that region. We describe a new error correction procedure for localized component calibration that is used to drive this analysis. We also describe important challenges in automating component calibration and the methods we have developed for addressing these challenges. Our work builds on previous research at SLAC in model-based analysis* but goes beyond previous work in developing new methods for local component calibration and a new approach to the automation of heuristic search. This approach includes the application of heuristic rules for data pruning and region identification as well as rules for identifying and correcting miscalibrated components. We discuss results of preliminary tests on simulated and real data from the HER and SPEAR rings at SLAC. A prototype version of this system will also be available for demonstration at this conference.