PEP-X Light Source at SLAC - Status Report

Table of Contents

Executive Summary

- 1. Overview
 - 1.1 Long-Range Goals for SSRL
 - 1.2 PEP-II Facility
 - 1.3 PEP-X Implementation
 - 1.3.1 Light Source Possibilities
 - 1.3.2 PEP-X Base Implementation
- 2. PEP-X Accelerator Physics
 - 2.1 Lattice Design
 - 2.2 Damping Wigglers
 - 2.3 Dynamic Aperture
 - 2.4 Injection
 - 2.5 Stability Requirements
 - 2.6 Intrabeam Scattering and Touschek Lifetime
 - 2.7 Collective Effects
 - 2.8 Fast Ion Instability
 - 2.9 Lattice Migration from PEP-II to PEP-X
 - 2.10 Conclusion
- 3. Photon Sources and Beam Lines
 - 3.1 Insertion Devices and Source Magnets
 - 3.2 Beam Line and Experimental Hall Layout
 - 3.3 Soft X-ray FELs
 - 3.4 RF Undulators
- 4. PEP-X Implementation
 - 4.1 Accelerator Systems
 - 4.1.1 Magnets and Supports
 - 4.1.2 Magnet Power Supplies
 - 4.1.3 Damping Wigglers
 - 4.1.4 Vacuum System
 - 4.1.5 RF System
 - 4.1.6 Bunch-Lengthening Cavity System
 - 4.1.7 Injection System
 - 4.1.8 Instrumentation, Control and Feedback Systems
 - 4.1.9 Machine and Personnel Protection Systems
 - 4.1.10 RF Beam Manipulation Components

- 4.1.11 Cable Plant
- 4.1.12 Utilities
- 4.1.13 Accelerator Tunnel and Shielding
- 4.1.14 Facility Preservation
- 4.2 Photon Beam Line Systems
 - 4.2.1 High Power Beam Lines
 - 4.2.2 Mirrors
 - 4.2.3 Monochromators
 - 4.2.4 Downstream Optical Components
 - 4.2.5 Beam Line Design Challenges

Acknowledgments

References