



Joint Damping Rings and Magnets Systems Meeting



Introduction

- Goal is to have an informal discussion of magnet issues in the DR and the transition from RDR to EDR planning
- Outline
 - **RDR Overview**
 - **Evolving areas**
 - Lattice Requirements
 - Distributed Power System
 - Kicker R&D
 - Commissioning Needs
 - **Proposed EDR Coordination**
 - **Items requiring “special” attention during the EDR**
 - Standards and standardization across areas
 - Interface requirements
 - Coordinated development of components across systems
 - Where should case studies be conducted (eg, FMEA)
 - **Other**



RDR Overview

- Basic RDR Assumptions using OCS6 Lattice

Type	Number	Power Method
Dipoles (6 m)	114	6 strings, 1 per arc
Dipoles (3 m)	12	6 strings, 1 per arc
Quadrupoles	747	Individual
Sextupoles	504	Individual
Horizontal correctors	150	Individual
Vertical correctors	150	Individual
Skew quadrupoles	240	Individual
Wigglers	80	Individual
Kickers	64	Individual
Septa	4	Individual

Type	Max KL	L [m]	Max field error	# of types
Dipoles	0.0524	6 ; 3	2×10^{-4}	2
Quadrupoles	0.31 m^{-1}	0.3	2×10^{-4}	4
Sextupoles	0.24 m^{-2}	0.25	2×10^{-3}	1
H correctors	0.002	0.25	5×10^{-3}	1
V correctors	0.002	0.25	5×10^{-3}	1
Skew quads	0.03 m^{-1}	0.25	3×10^{-3}	1
Wigglers	–	2.5	3×10^{-3}	1



Rapidly Evolving Areas

- Lattice designs
 - **OCS6 \Rightarrow OCS8**
 - **FODO alternate lattice**
 - **Potentially significant changes in magnet counts and adjustments to strengths**
- Distributed Power System
 - **Reduce cost**
 - **Reduce tunnel heat load**
 - **Requires matching of magnet specifications to bus specification**
- Wiggler
 - **Optimize cost and construction**
 - **Implement optimized physics parameters**
- Kickers
 - **Significant developments in pulsed power supplies with new test results imminent**
 - **Injection/Extraction region design**
- Some Open Questions such as Commissioning Needs
 - **Ex: Do we need to have bipolar supplies to support commissioning of positron ring with electrons?**



Items for “Special Attention”

- What will be the mechanism within the EDR organization to set standards and to standardize designs across Area Systems?
- Interface requirements are key
 - **Vacuum system** ⇔ **aperture requirements**
 - **Tunnel heat loads**
 - **LCW**
 - **etc.**
- How to handle coordinated development across systems
 - **Example: Redundant HA bipolar supply development needed for multiple areas**
- Case studies
 - **FMEA (Failure Modes and Effects Analysis)**
 - **Reliability**



Other

- Open discussion with experts present to identify key issues that need to be incorporated into EDR WP planning
- Notes will be taken...