

e^+ SOURCE EDR MAGNETS

OVERVIEW

JCT

e⁺ SOURCE MAGNET WORK PACKAGES

(J. CLARKE, 071016)

- **MAGNETS AND PS**

Positron Source work packages	
→	Undulator System
	Target System
→	Capture Magnet (OMD)
	RF Systems
	Collimation (Photon & positron) and dumps
	Polarisation specific issues (polarimetry, spin preservation, spin rotators)
	Auxiliary positron source (Keep Alive)
	Remote Handling and target hall arrangement
	System Integration
	Lattice design
	Compton Source
→	Magnets
→	Power Supplies
	Vacuum System
	Instrumentation

BRIEF INTRODUCTION

- **E⁺ SOURCE CONFIGURATION CHANGE**
 - **LONG TRANSFER LINE TO DR ELIMINATED WITH NEW CONFIGURATION**
- **VLADIMIR REDUCED THE NUMBER OF MAGNET STYLES:**

<i>e+ Source Magnets</i>			
Dipoles	Quadrupoles	Solenoids	Undulators
D13L2250	Q13L1000	S13L100	Undulator Modules
D154L400	Q13L500	S154L300	
D160L300	Q160L300V1	SL310L4300	
D40L2000	Q160L300V2	SL360L1300	
D72L500	Q80L300	"Gun Solenoids"	
D35L104	QSC74L200v1	SLSCL2500	
	QSC74L200v2		
	QSC74L200v3		
Number of styles			21
e+ Source Magnet Total			1993

KEY ELEMENTS

- **UNDULATORS**
- **SUPERCONDUCTING SOLENOIDS SLSC2500**
 - **MAGNET, CRYOSTAT, ETC. – DESIGN NEEDED**
- **SUPERCONDUCTING QUADS**
 - **QSC74L200V1, -V2, -V3 – SPAN ENERGY RANGE FROM 500 MEV TO 5 GEV**
- **LARGE CONVENTIONAL SOLENOIDS**
 - **SL310L4300, SL360L1300**

KEY ELEMENTS, CONT

- **POWER SYSTEMS**
 - **ITERATION W/ MORE DETAILED MAGNET PARAMETERS**
 - **OPTIMIZATION OF I, V FOR CABLES, PS, & MAGNETS**
 - **LCW LOADS**
 - **MAGNET SIZE AND COST**
 - **STRINGING RULES**
 - **REVIEW WHICH MAGNETS NEED INDIVIDUAL PS**
- **VACUUM SYSTEM & MAGNET STANDS**
 - **DETAILS NEED TO BE DEVELOPED**
 - **BEAM LINE PHYSICAL LAYOUTS FOR INTERFACES & INTERFERENCES**
 - **INSTALLATION OF BEAM TUBES IN SITU**

e⁺ EDR MAGNET DESIGN ESTIMATE FROM RDR - APRIL 2007

Magnet Engineering Name (Style)	Number of Magnets	Design		
		Sci/Eng Hrs	Dsgn/Drft Hrs	Admin Hrs
Positron Source System Magnets				
<i>e+ Source Conventional Magnets</i>				
D13L2250	112	196	733	23
D154L400	12	196	733	23
D160L300	840	196	733	23
D40L2000	20			
D72L500	8			
Q13L1000	85	196	733	23
Q13L500	20	196	733	23
Q160L300V1	612	196	733	23
Q160L300V2	75	196	733	23
Q80L300	48			
S13L100	16	196	733	23
S154L300	16	196	733	23
SL310L4300	22	1,152	2,053	80
SL360L1300	4	1,152	2,053	80
"Gun Solenoids"	10	438	1,320	44
D35L104	1	196	733	23
<i>e+ Source Superconducting Magnets</i>				
QS C74L200		828	2,371	65
QS C74L200	23	828	2,371	65
QS C74L200	12	828	2,371	65
<i>Undulator (Daresbury)</i>				
Undulator Modules	45	+	+	+
e+ Source Magnet Total	1981	7,185	19,871	633

**NOTE:
ESTIMATE DOES
NOT INCLUDE
PULSED
MAGNETS
(DISCUSSED BY
T. MATTISON)**

DISCUSSION

- **MAGNETS – VLADIMIR KASHIKHIN**
- **PULSED MAGNETS – TOM MATTISON**
- **POWER SYSTEMS – PAUL BELLOMO**