

ACTIVITIES ON HIGH BRIGHTNESS PHOTO-INJECTORS AT THE FRASCATI LABORATORIES, ITALY

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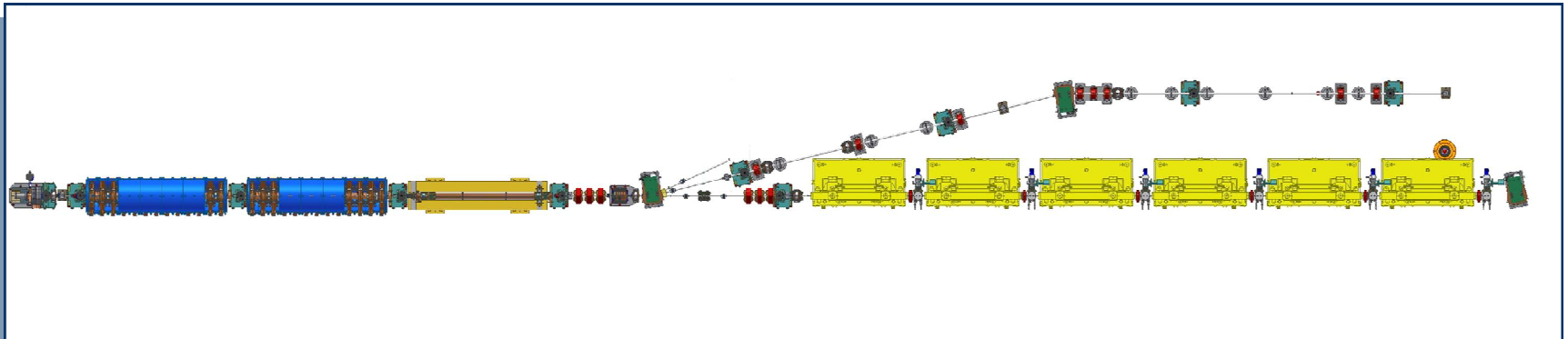
on behalf of the SPARC/X
team



SPARC photo-injector

Beam Energy	155-200 MeV
Bunch Charge	1.1 nC
Rep. Rate	1-10 Hz
Peak Current (>50% bunch)	100 A
Norm emittances (integrated)	2 mm-mrad
Norm. emittances (slice len. 300 μ m)	<1mm-mrad
Total correlated energy spread	0.2%
Total uncorrelated energy spread	0.06%
e-bunch duration (RMS)	$\sim$ 4 ps

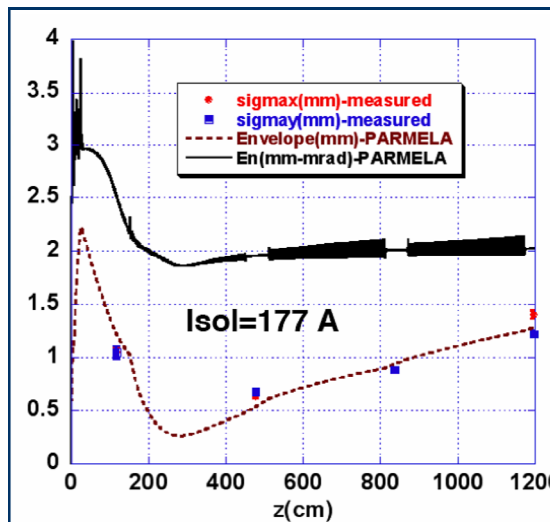
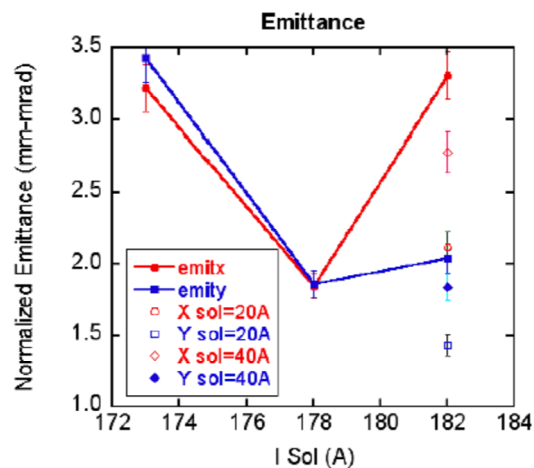
Period	2.8 cm
Resonant wavelength (nm)	500
Undulator length	2.156.m
No of Periods	77
Gap (nom./min/max)	0.958 / 0.6 / 2.5 cm
K (nom./max/min)	2.145 / 3.2 / 0.38
Remanent field	1.31 T
Blocks per period	4
Block size (h x l x w)	2 x 0.7 x 5 cm



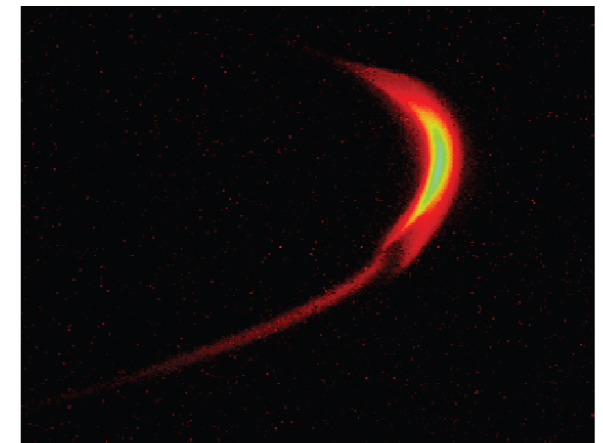
Main achievements

500 pC, 8.5 ps, 150 MeV

Imaging of long. Phase space with the RFD

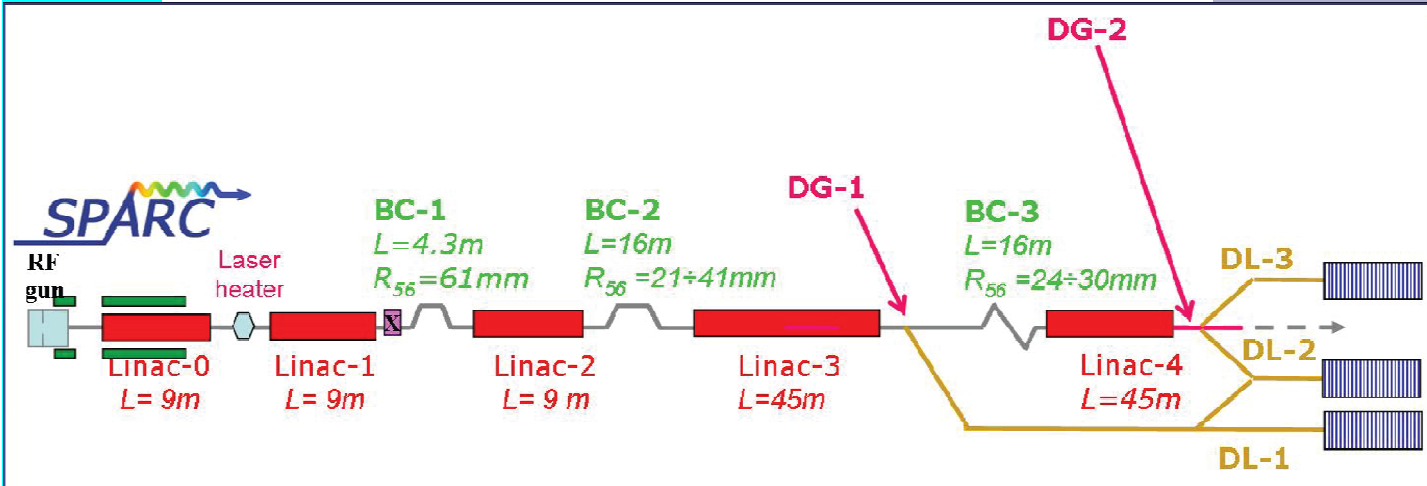
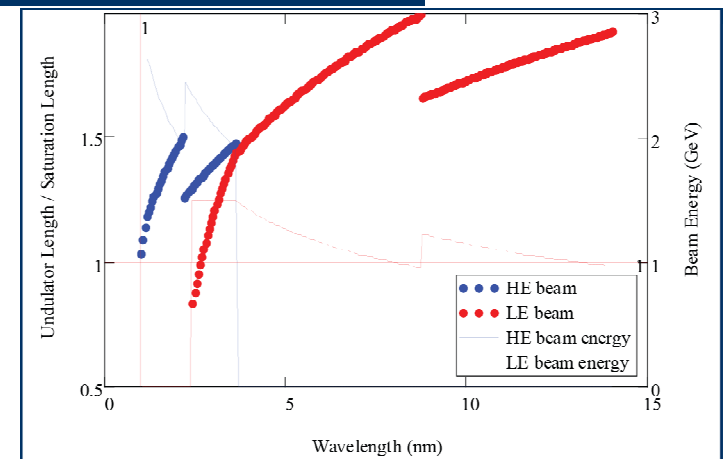


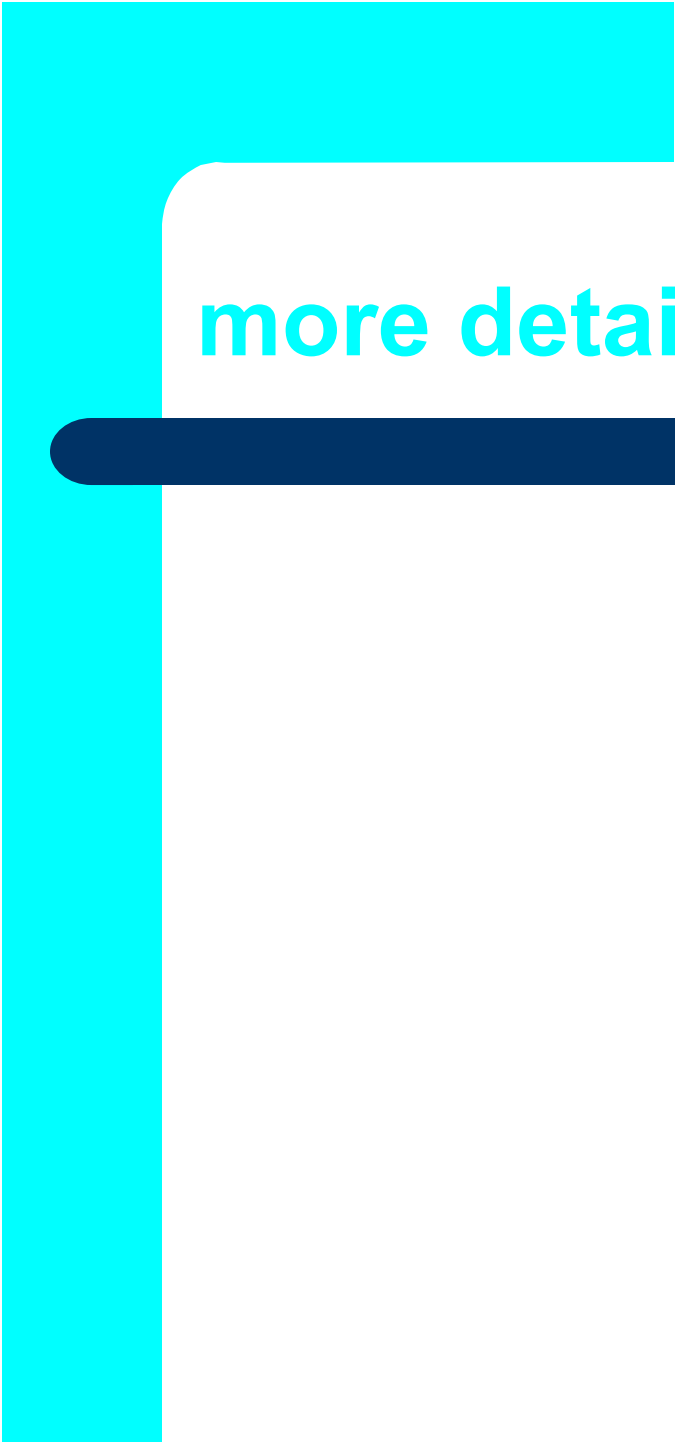
PARMELA SIMULATION



The SPARX project

Energy	(GeV)	E	1.5	2.4
Peak current	(kA)	I_{pk}	1.	2.5
Normalized transverse emittance slice	(μm)	ε_n	1	1
Correlated energy spread	(%)	σ_δ	0.1	0.1
Radiation wavelength	(nm)	λ_r	$13 \div 3$	$3 \div 1.5$





more details on



TUP093