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Lattice Candidates for the ILSF Storage Ring

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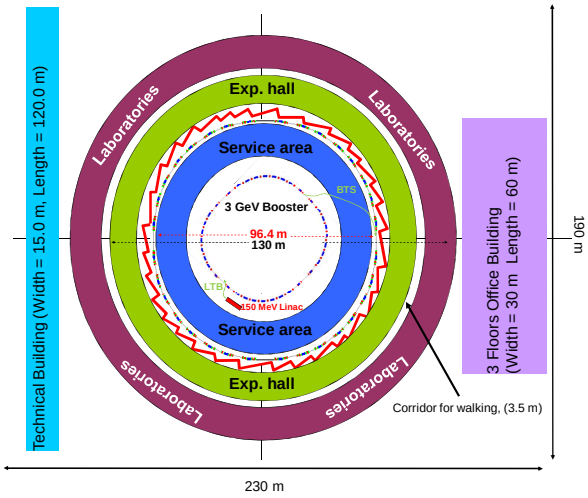
ABSTRACT

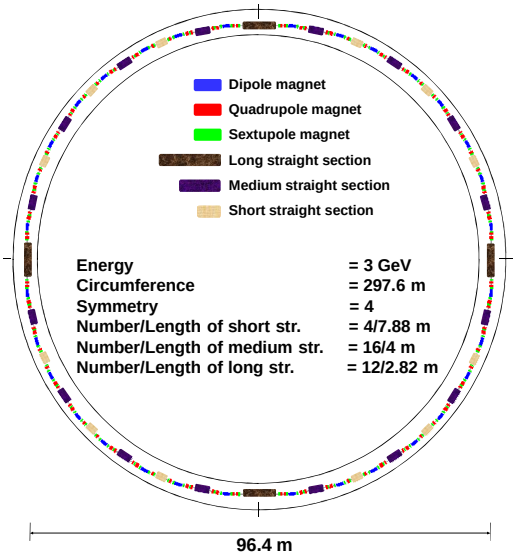
Iranian Light Source Facility (ILSF) is a new 3 GeV third generation synchrotron light source which is currently in design and will be built in Iran. It will provide a high photon flux density to cover requirements of experimental science in several fields. Regarding to the proposed budget and in order to produce high quality X-ray pulses with several photon beamlines as a request of users, it has been decided to design a very low emittance (ε<5nm-rad) storage ring with a typical beam intensity of 400 mA and circumference in the range of 280 m to 320 m.

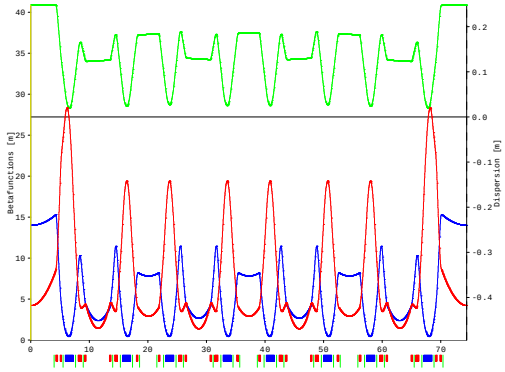
INTRODUCTION



LATTICE CHOICES

1st candidate

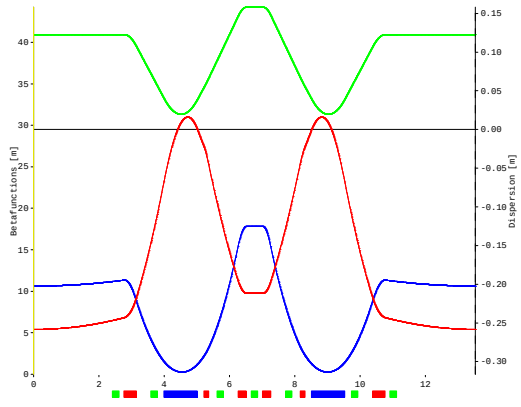




Parameter	Value
Energy (GeV)	3
Circumference (m)	297.6
No. of super-period	4
Current (mA)	400
Emittance (nm-rad)	3.278
Harmonic number	496
RF frequency (MHz)	500
Tune [Q_x/Q_y]	18.265/11.328
Nat. energy spread	1.0108E-3
Nat. Chromaticity [ξ_x/ξ_y]	-34.56/-28.02
Momentum compaction	7.621E-4
Radiation loss per turn (MeV)	1.0167

LATTICE CHOICES

2nd candidate



Parameter	Value
Energy (GeV)	3
Circumference (m)	297.6
No. of super-period	22
Current (mA)	400
Emittance (nm-rad)	1.96
Harmonic number	496
RF frequency (MHz)	500
Tune [Q_x/Q_y]	21.170/5.134
Nat. energy spread	1.0125E-3
Nat. Chromaticity [ξ_x/ξ_y]	-56.17/-35.37
Momentum compaction	5.5156E-4
Radiation loss per turn (MeV)	1.002