**ABSTRACT**

Iranian Light Source Facility (ILSF) is a 3 GeV Synchrotron light source with the circumference of 489.6 m. Using locally available material and the emittance of less than 1 nm-rad are two main points of the ILSF storage ring lattice, consisting of 56 low field pure bending magnets, 252 quadrupoles and 196 sextupoles with additional coils for the correctors and skew quadrupoles. The physical designs of these magnets have been performed relying on two dimensional codes POISSON [1] and FEMM [2]. Three dimensional RADIA [3] was practiced too, to audit chamfering values.

**INTRODUCTION**

Using locally accessible materials has bound the beam dynamic group to utilize the magnets with upper field limits of 1.6 T for the dipoles, 0.8 T for the pole tip of quadrupoles and 0.4 T for the pole tip of sextupoles in their design. No gradient in the low field dipoles has been considered in the design stage of the lattice to ease alignment. [4]

**DIPOLES**

Through a none symmetric standard shim the field quality would be lower than 0.02% within the good field region ± 18 mm.

**SEXTUPOLES**

ILSF storage ring sextupole magnets are in 6 families with additional coil for horizontal, vertical steering with maximal angle 0.5 mrad, and skew quadrupole correction. Simulations in 3D by RADIA code were done, we set even without chamfering expected length and minimized harmonics are deduced.

**QUADRUPOLES**

The calculated gradient field quality by POISSON for all is lower than 0.04% with good field region of ±21 mm. The quadruple with the maximum field gradient of 25 T/m and the length of 0.5 m is considered.

**REFERENCES**

[1] uspas.final.gov/PCprog

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