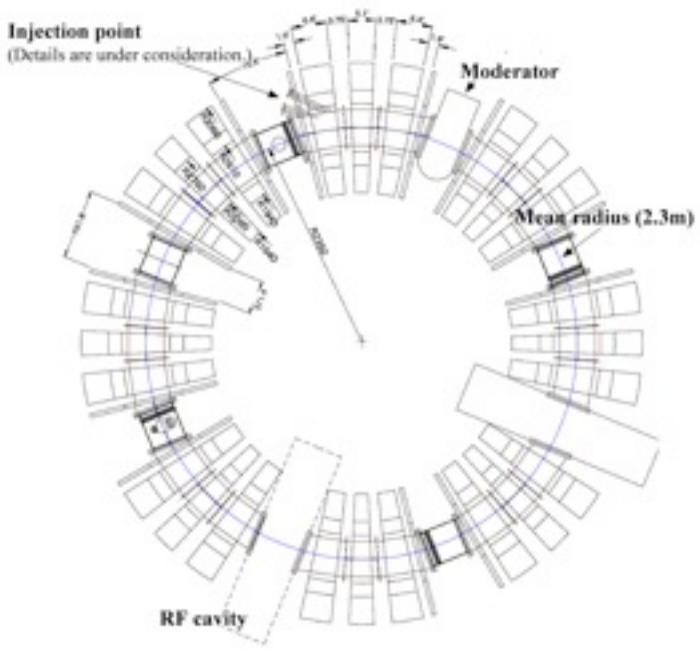
FFAG-ERIT ring parameters



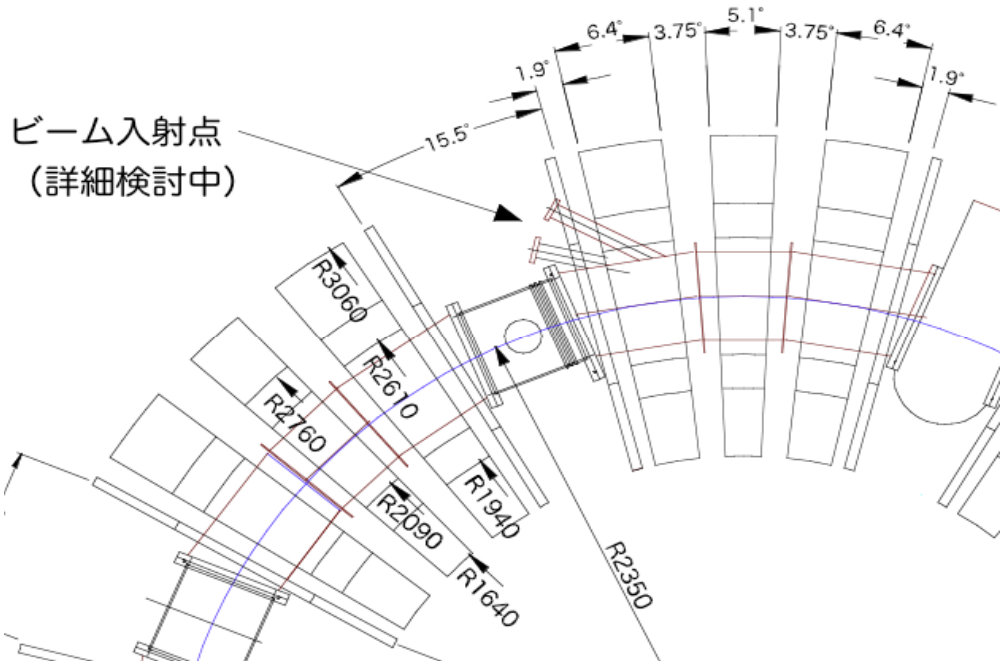
Top view of FFAG-ERIT ring

FFAG-ERIT ring parameters (11MeV proton)

Lattice	FDF radial
Mean radius (r_0)	2.35 [m]
Number of sectors	8
Field index k value	1.92
FD ratio	~ 3
Horizontal tune, Vertical tune	1.73, 2.22
Horizontal acceptance, Vertical acceptance	7000π [mm mrad] 3000π [mm mrad]
β_x, β_y @ target	1.36, 0.79 [m]
Revolution frequency	~ 3.02 [MHz]
rf frequency	18.1 [MHz] (h = 6)
rf gap voltage	225 [kV]

Magnets specifications

opening angle of F-mag.		6.4 [deg]
opening angle of D-mag.		5.1 [deg]
opening angle of F-D gap		3.75 [deg]
clamp thickness		4 [cm]
pole width in radial direction		52 [cm]
total width in radial direction		142 [cm]
magnet height		139 [cm]
Half gap @ r = 2.35 [m]		7.5 [cm]
F-magnet	Magnetic field	0.825 [T]
	AT	58500 [AT]
	mass	4.1 [ton]
D-magnet	Magnetic field	0,727 [T]
	AT	54500 [AT]
	mass	3.4 [ton]



Emittance growth caused by multiple scattering with carbon foil at beam injection

Thickness of C-foil : 20 micro-gram/m^2

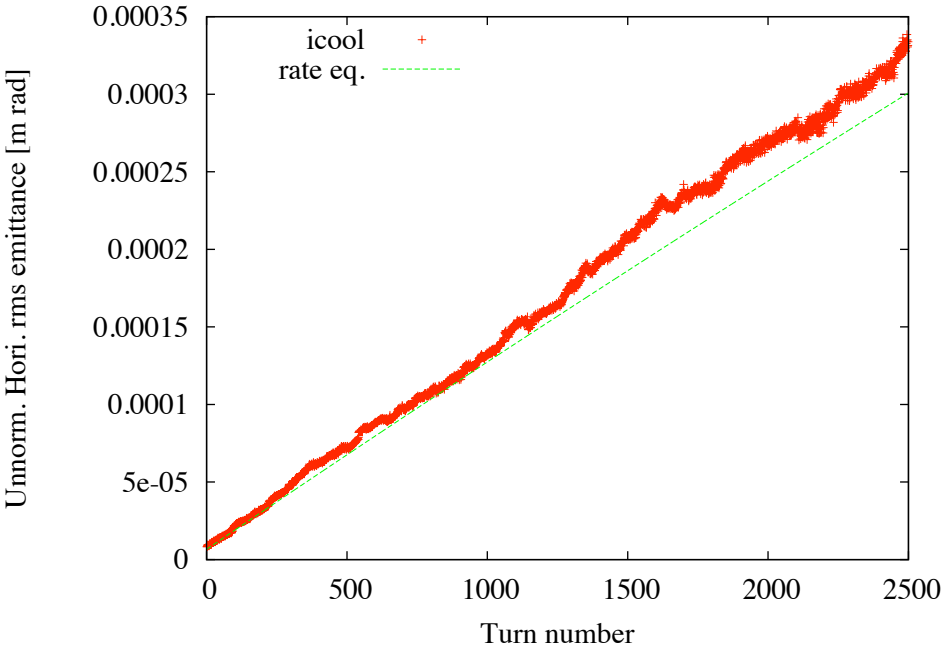
Energy : 11MeV

Emittance : 8 mm.mrad (unnormalized rms)

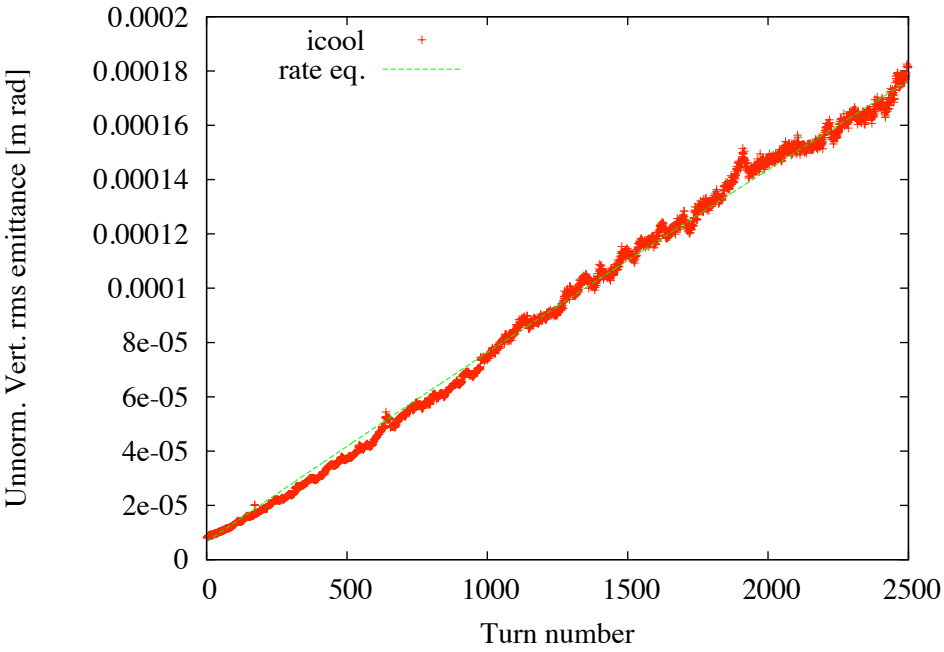
Energy spread : +- 1% (rms)

Bunching factor : ~0.3

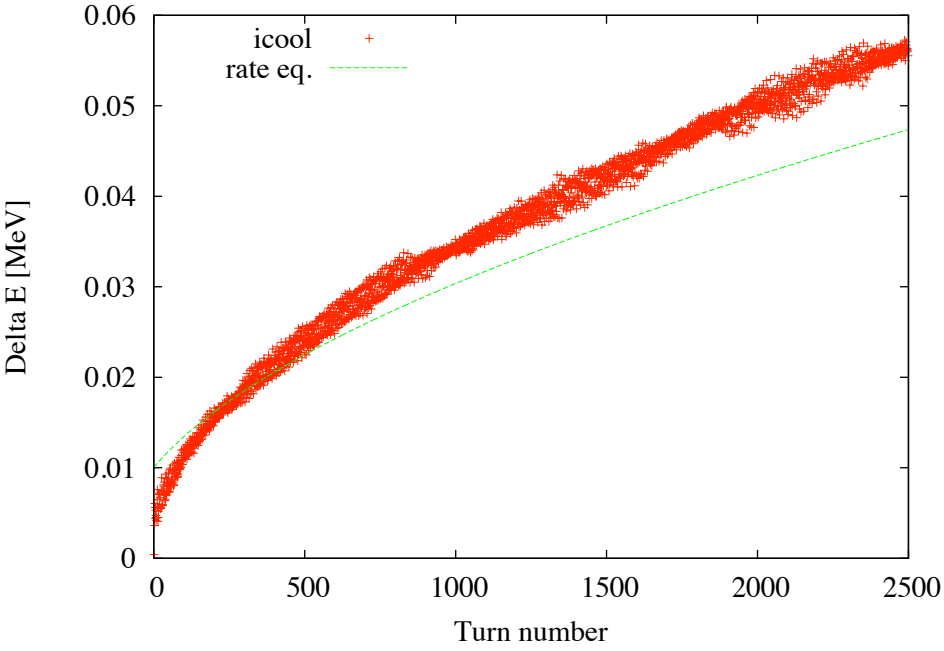
f rf = 20MHz (h=5)



Horizontal emittance



Vertical emittance



Energy spread

Linac beam

Beam current ~ 5mA (10mA) peak

Beam duration ~ 120 microsec

Repetition 100 Hz (max.)

Laslett tune shift 6x10 11 ppp (=: 5mA x 19 microsec) ----> -0.25