GEANT 3.21 Simulations of Balbekov's Ring - last update.

Z. Usubov, July 30, 2002

Used parameters

- Bending part - 52 cm radius.
- Circumference = 36.9547 m
- $B_D = 1.45485\,T$
- Hardedge Field model applied
- RF frequency = 199.0000 MHz
- RF $V_0 = 12.758$ MV/m

- LH main absorber length 133 cm

Initial beam conditions

- $E_0 = .250$ GeV
- $\sigma_{Etot} = 18\, MeV$

- $\sigma_{Py} = \sigma_{Pz} = 32\, MeV/c$

- $\sigma_y = \sigma_z = 4\, cm$
- $\sigma_x = 8\, cm$

Correlation between E and P_T taken into account

5000 muons in a bunch was simulated

25 % losses occur during first turn.

In emittance calculations

$|x, y, z| \leq 25\, cm$ applied

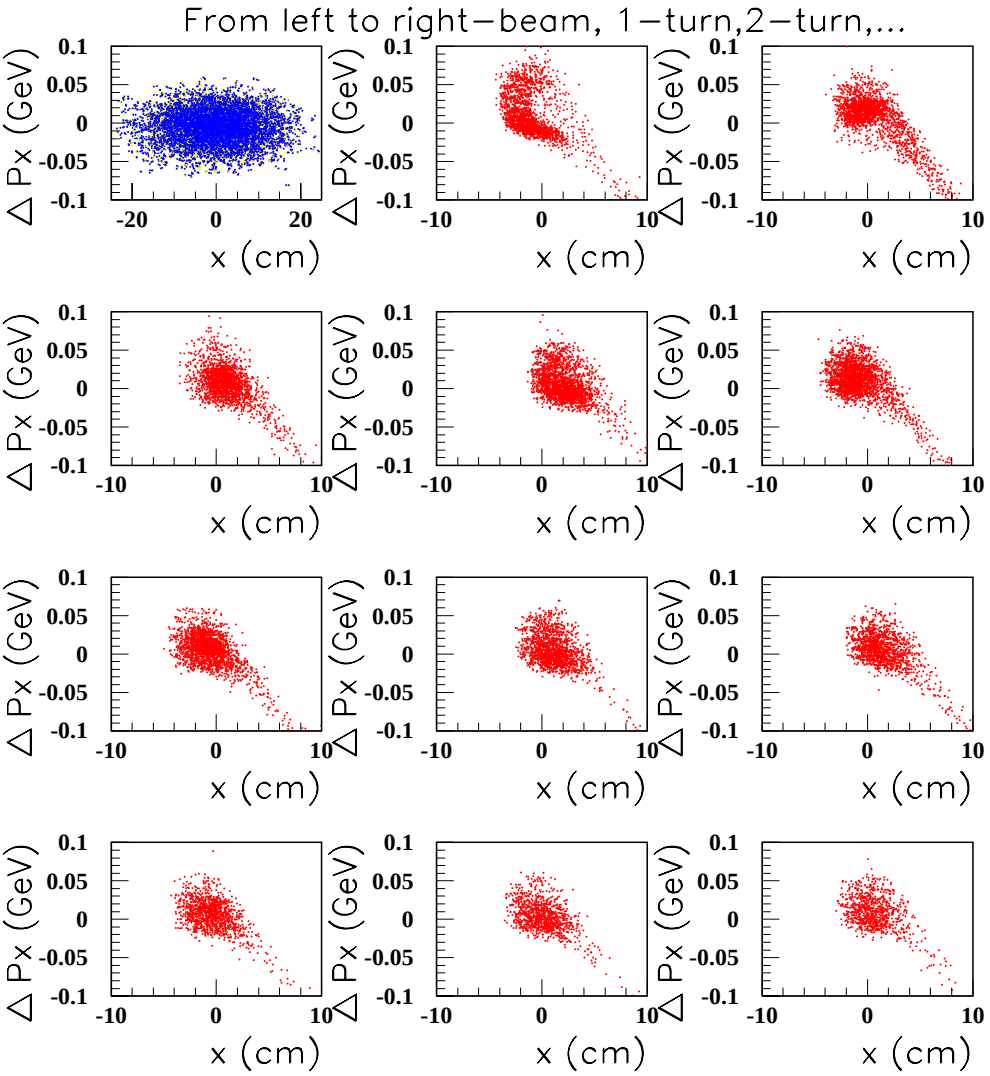
From left to right−beam, 1−turn,2−turn,...
Δ Px (GeV)
x (cm)
0.1
0.05
0
-0.05
-0.1
-20
-10
10
20

Fig.1

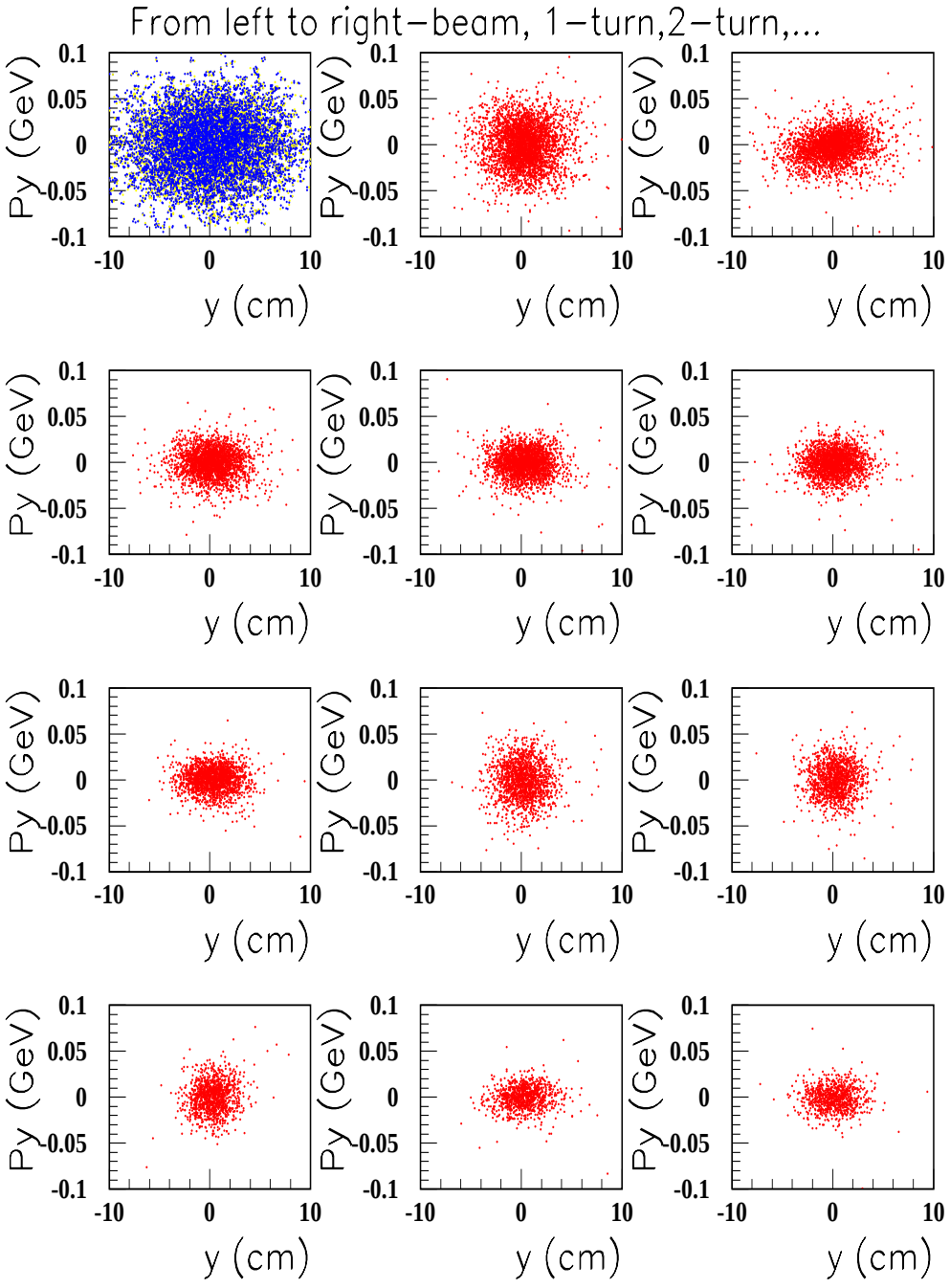
From left to right−beam, 1−turn,2−turn,...
Py (GeV)
y (cm)
0.1
0.05
0
-0.05
-0.1
-10
0
10

Fig.2

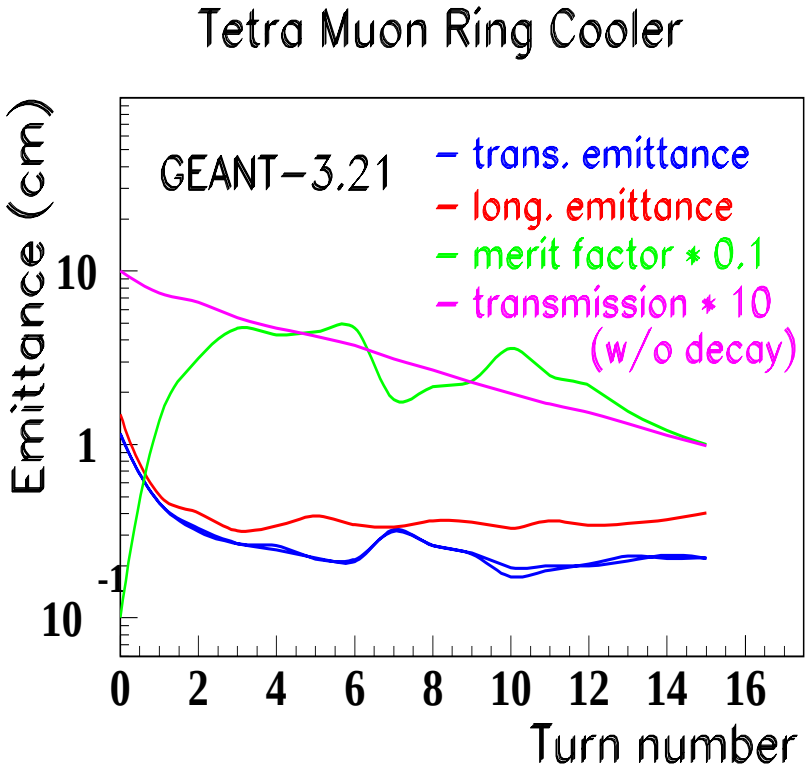
Tetra Muon Ring Cooler
GEANT-3.21
trans. emittance
long. emittance
merit factor * 0.1
transmission * 10
(w/o decay)
Emittance (cm)
10
1
-1
10
0
2
4
6
8
10
12
14
16
Turn number

Fig.3

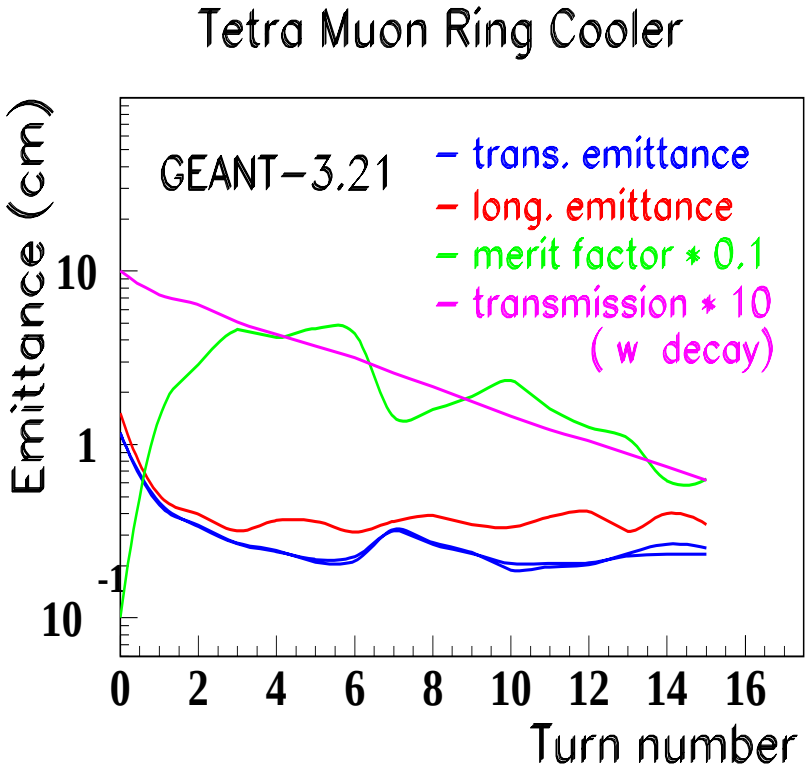
Tetra Muon Ring Cooler
GEANT-3.21
trans. emittance
long. emittance
merit factor * 0.1
transmission * 10
(w decay)
Emittance (cm)
10
1
-1
10
0
2
4
6
8
10
12
14
16
Turn number

Fig.4

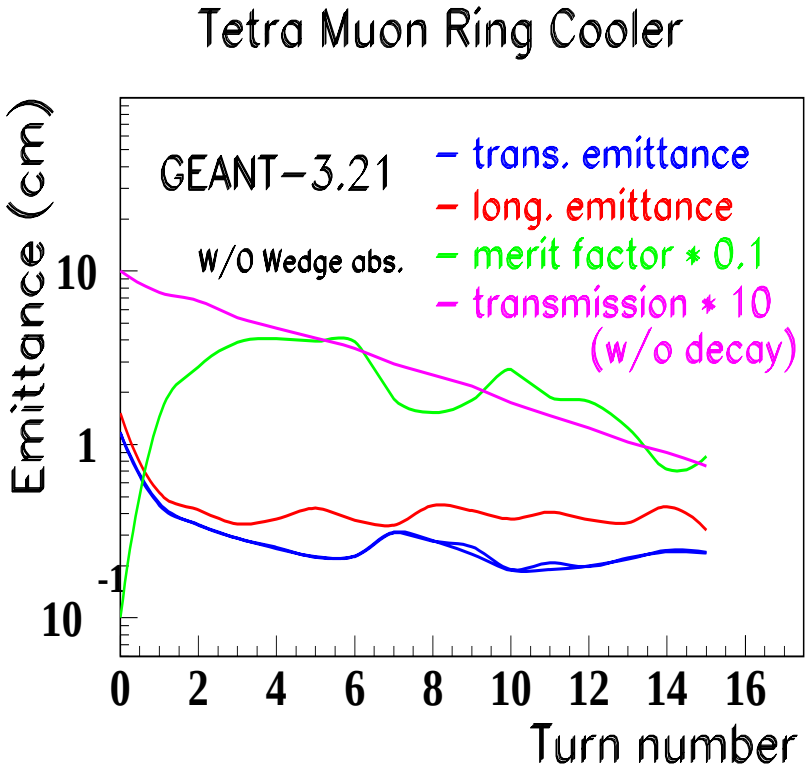
Tetra Muon Ring Cooler
GEANT-3.21
W/O Wedge abs.
trans. emittance
long. emittance
merit factor * 0.1
transmission * 10
(w/o decay)
Emittance (cm)
10
1
-1
10
0
2
4
6
8
10
12
14
16
Turn number

Fig.5

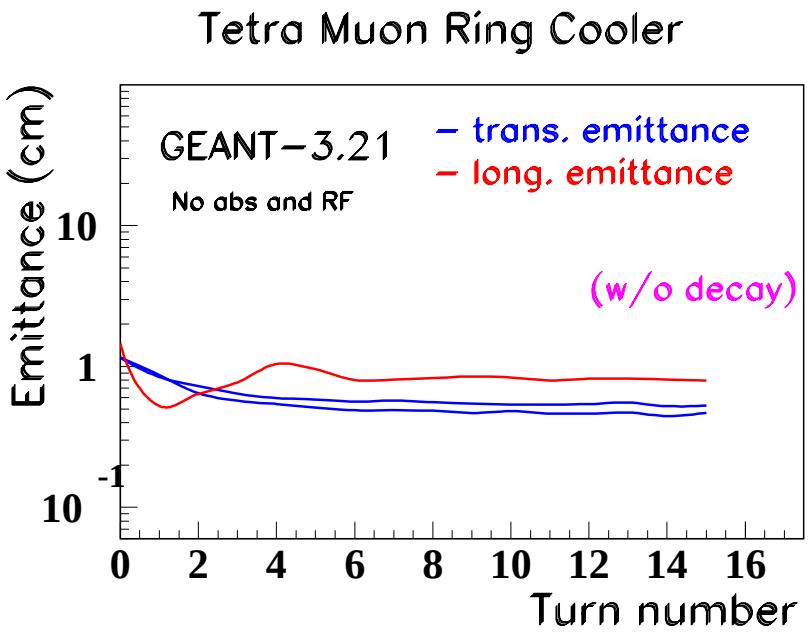
Tetra Muon Ring Cooler
GEANT−3.21
No abs and RF
trans. emittance
long. emittance
(w/o decay)
Emittance (cm)
10
1
10^-1
0
2
4
6
8
10
12
14
16
Turn number

Fig.6