GKICK + DISPERSION implementation in MATLIAR

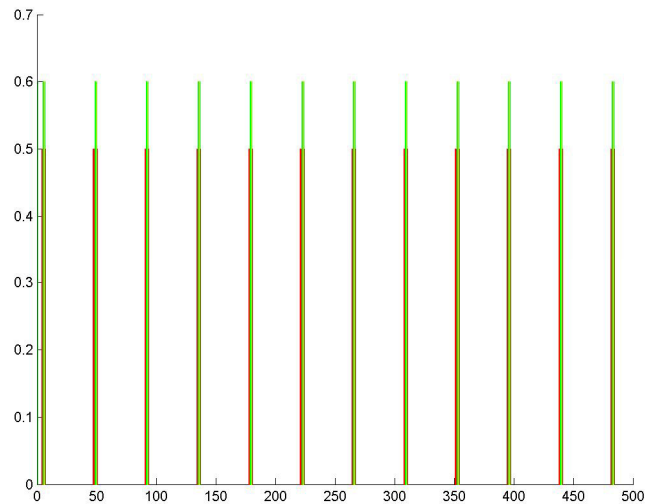
- **Francois** has put the DISPERSION & GKICK in the LIAR (matliar) code
  - in testing phase...

```
>> testlat.twiss

ans =

1056lx1 struct array with fields:
    psix
    psiy
    betax
    betay
    alphax
    alphay
    etax
    etaxp
    etay
    etayp
```

```
Command Window

       element: [1056lx1 struct]
          quad: [240x1 struct]
          sext: [0x1 struct]
          octu: [0x1 struct]
          mult: [0x1 struct]
    collimator: [0x1 struct]
          bend: [0x1 struct]
         struc: [7680x1 struct]
           bpm: [240x1 struct]
          gkic: [1920x1 struct]
          xcor: [240x1 struct]
          ycor: [240x1 struct]
        marker: [1x1 struct]
         twiss: [1056lx1 struct]
       support: [0x1 struct]

>> testlat.gkic

ans =

1920x1 struct array with fields:
    length
    dx
    dxp
    dy
    dyp
    dl
    dp
    angle
    dz
    v
    epointer
```

Also added in the meas_bpm output :EXTAX=24 ETAXP=25 ETAY=26 ETAYP=27

Simple Exercise # 1



6 FODO cells of ilc_linac type lattice

1 Q / 4 CM

Length: 520.86 m Begin/Final Energy: 10.00 / 22.48 GeV

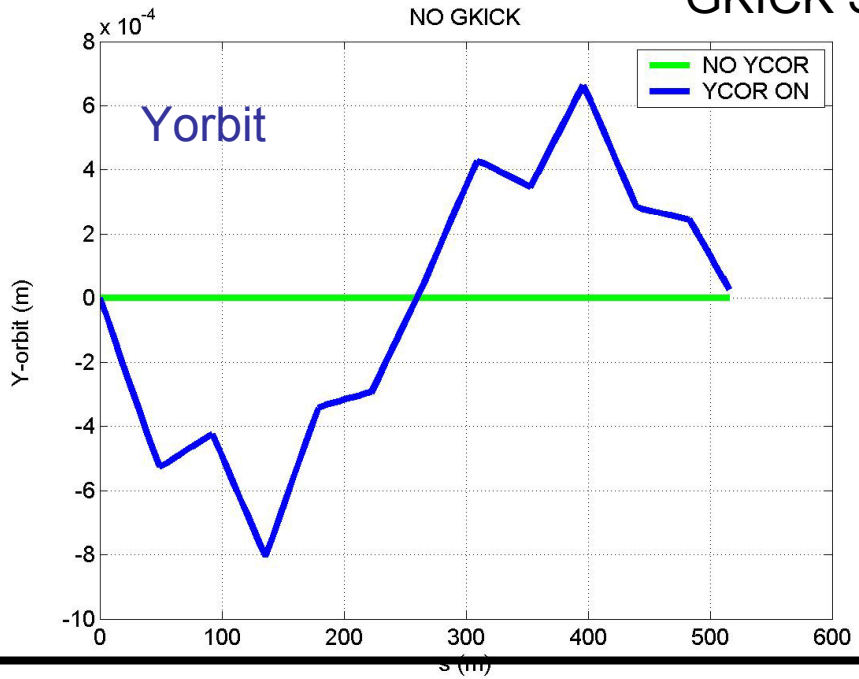
N_elements: 519 N_markers: 1
N_bend: 0 N_quad: 12
N_struc: 384
N_bpms: 96

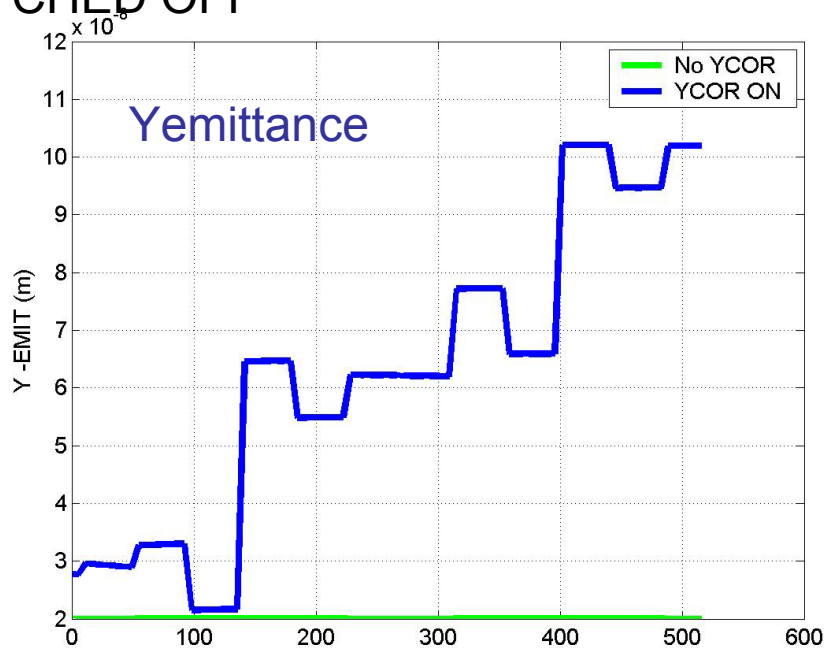
- Initial condition (x,y,xp,yp,detax,detay,detapx,detapy) = (0,0,0,0,0,0,0,0)

ONE Corrector and ONE GKICK just at the begining of the lattice (both together)

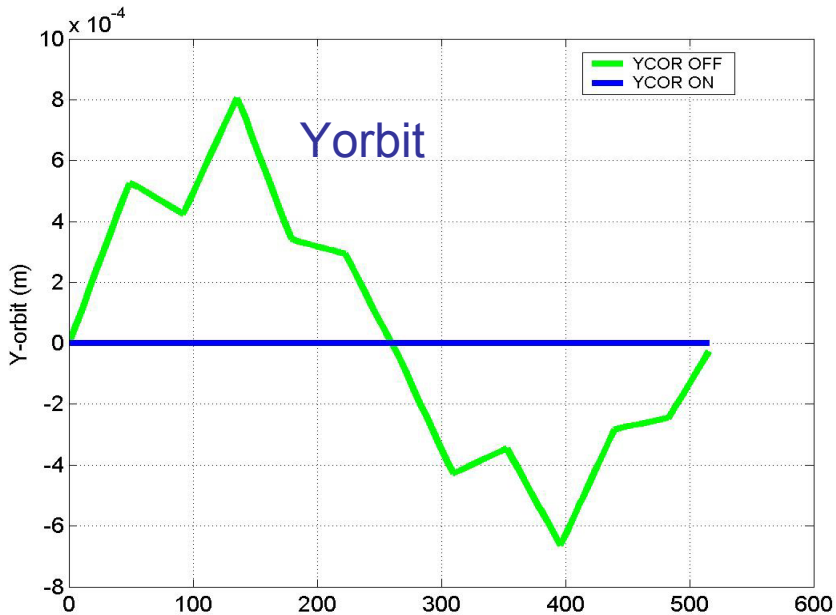
If (GKICK or/& YCOR SWITCHED ON) **KICK = DYP : - 10 micro rad**

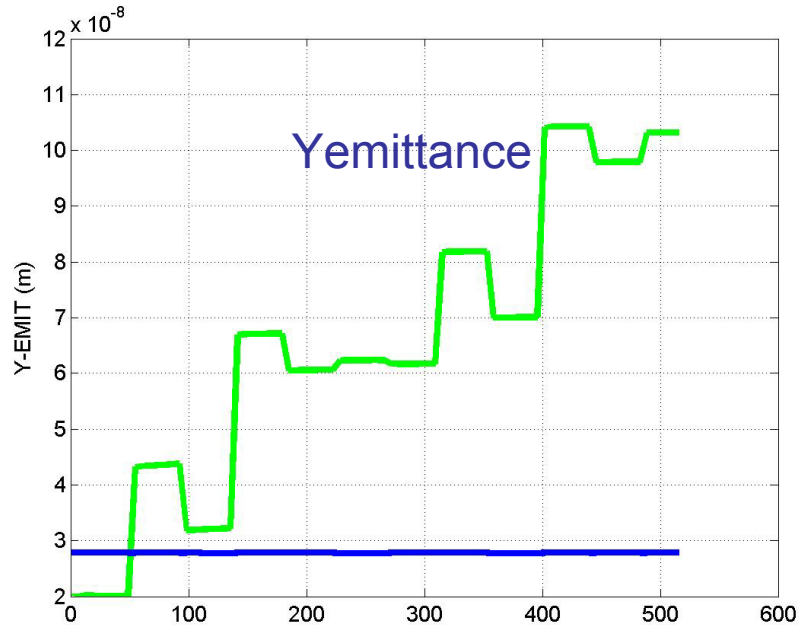
GKICK SWITCHED OFF





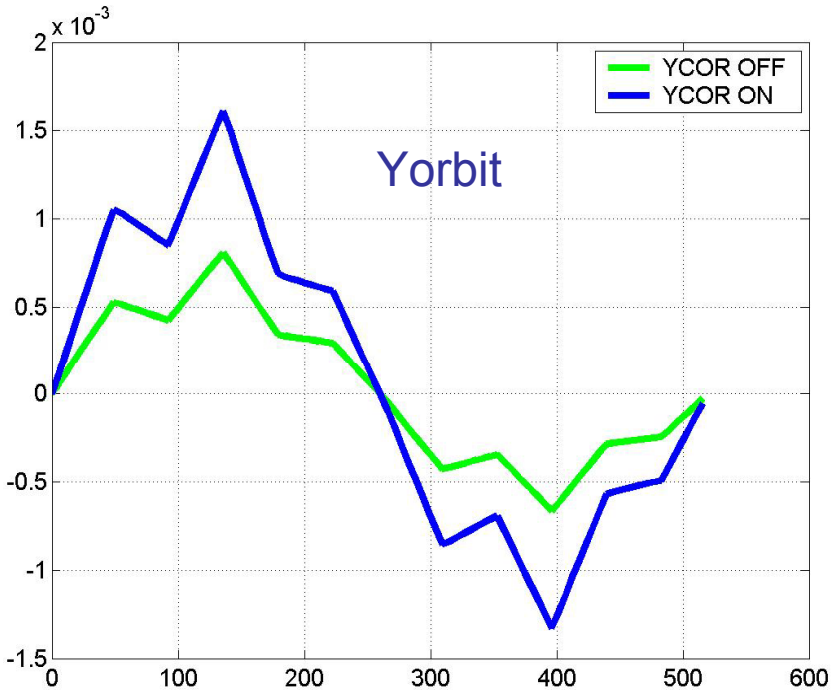
GKICK SWITCHED ON

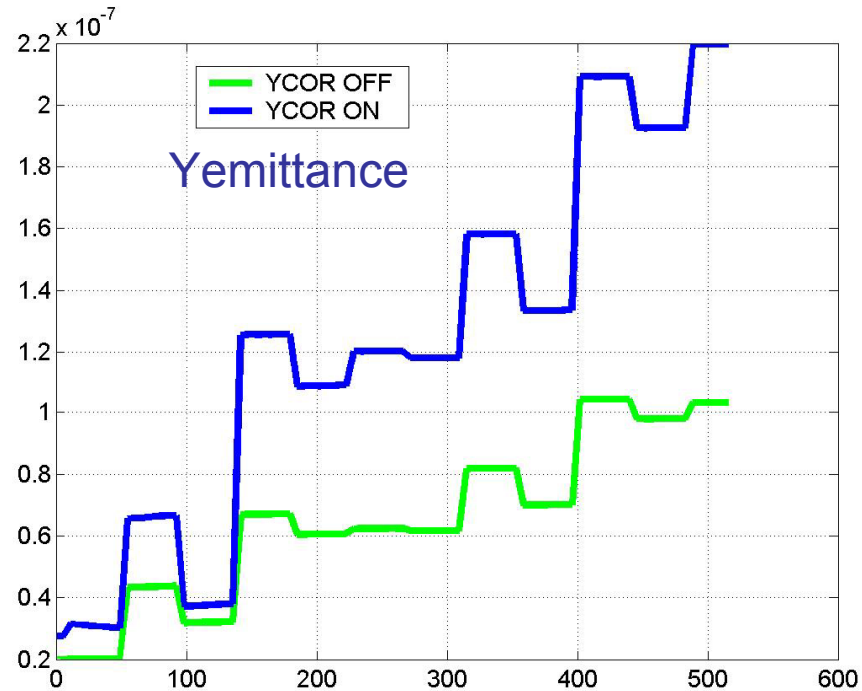




GKICK **DYP :** **- 10 micro rad**

YCOR KICK : **+ 10 micro rad**

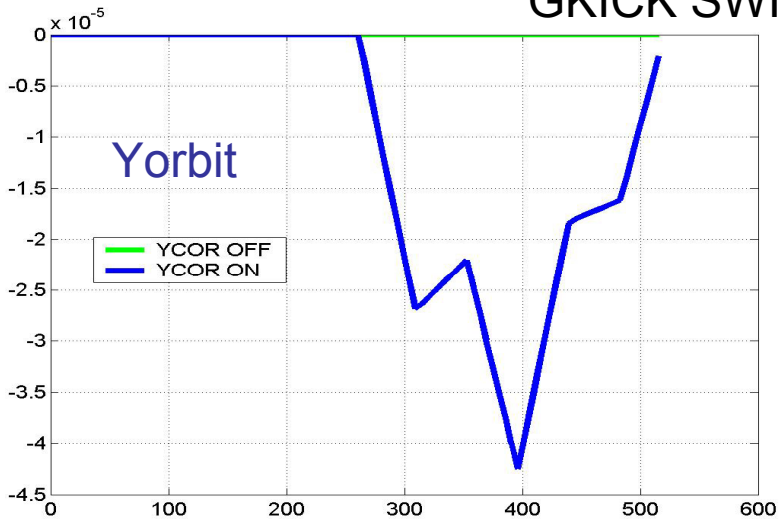


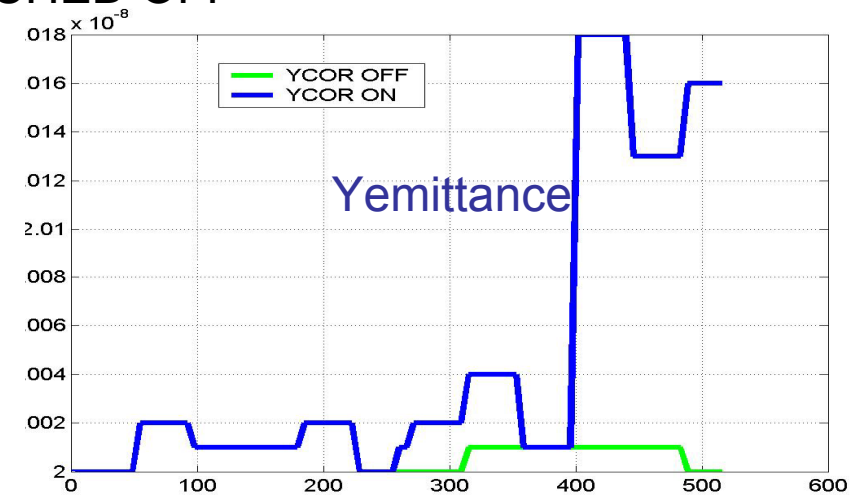


Simple Exercise # 2

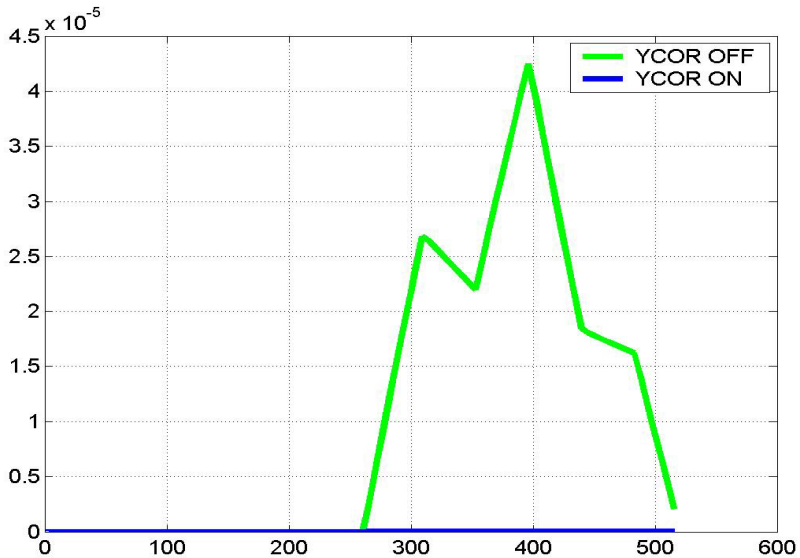
ONE Y Corrector and ONE GKICK just at the middle of the lattice (both together)
i.e. After three FODO cell; **DYP = Kick = - 0.5 micro radian (if ON)**

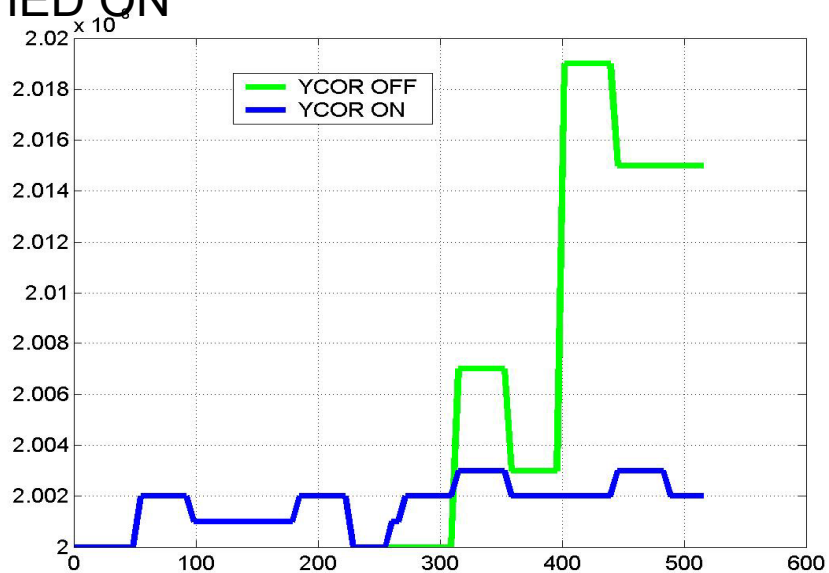
GKICK SWITCHED OFF





GKICK SWITCHED ON

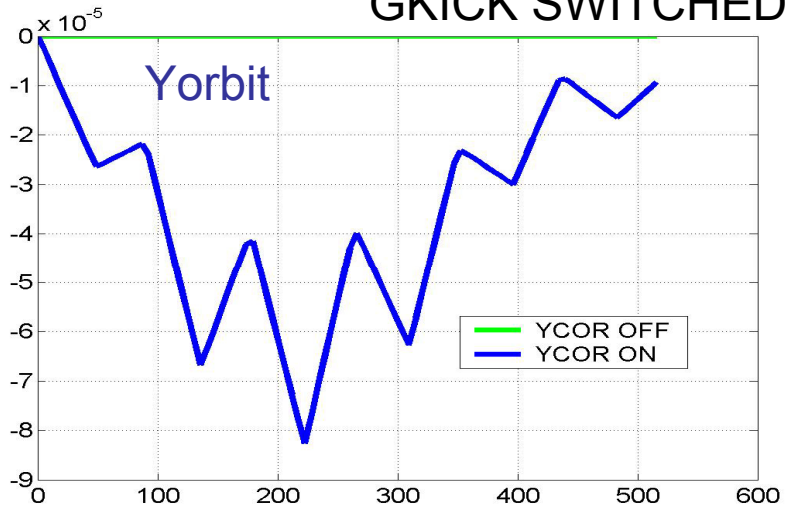


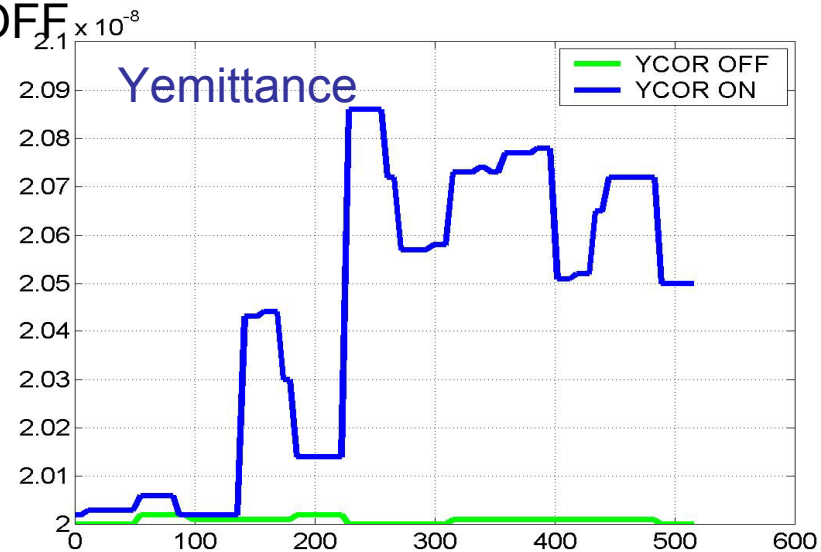


Simple Exercise # 3

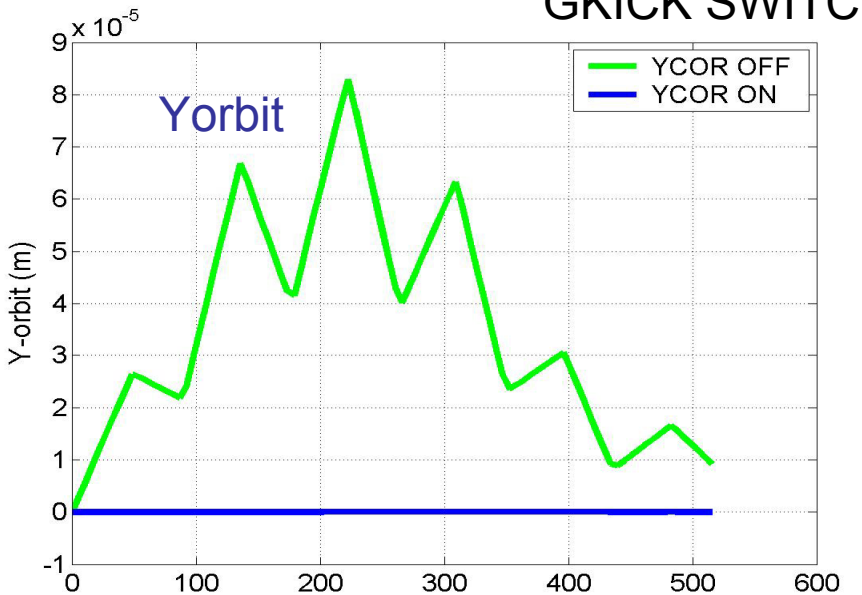
ONE Y Corrector and ONE GKICK at the begining of the each FODO cell (both together) i.e. Total 6; **DYP = Kick = - 0.5 micro radian (if ON)**

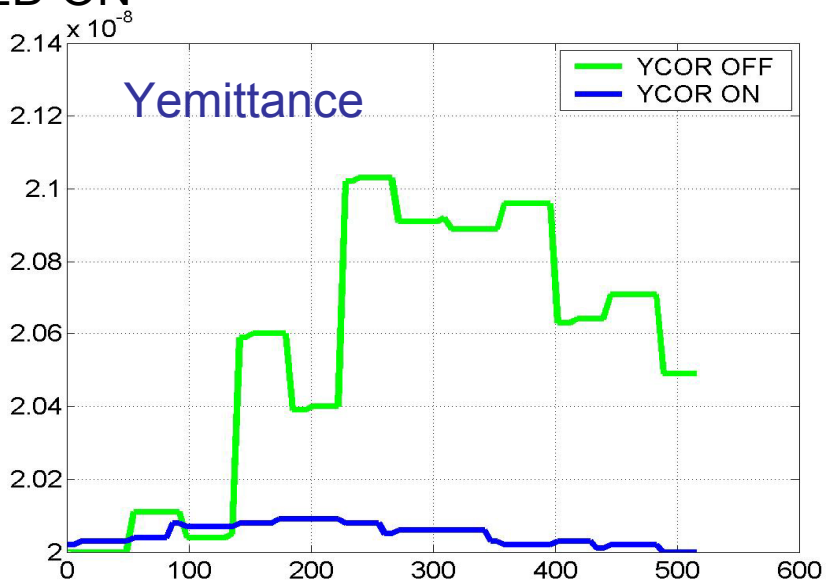
GKICK SWITCHED OFF





GKICK SWITCHED ON

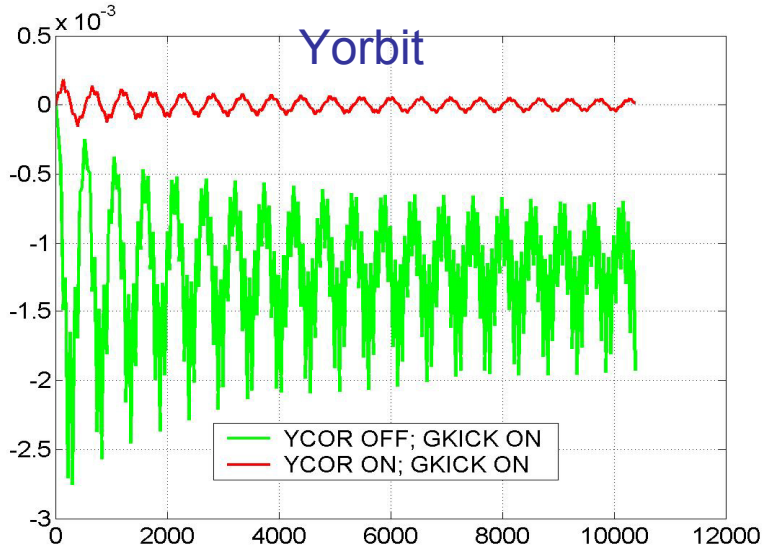


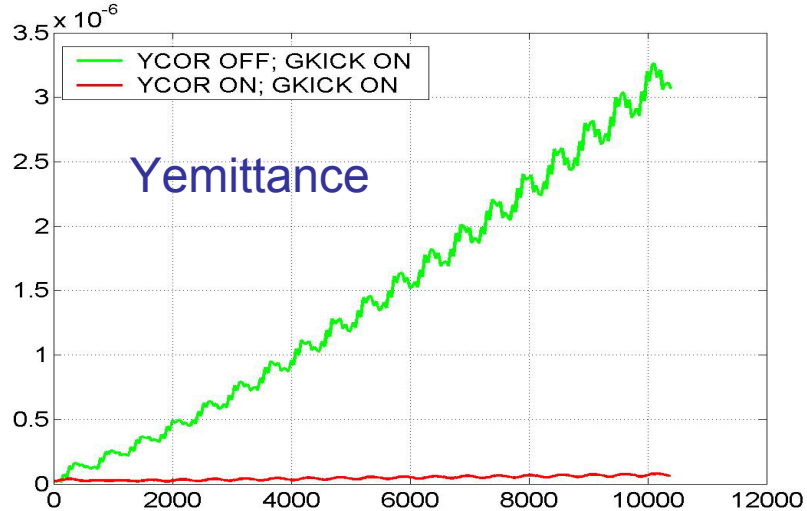


Exercise # 4 : ILC LINAC :

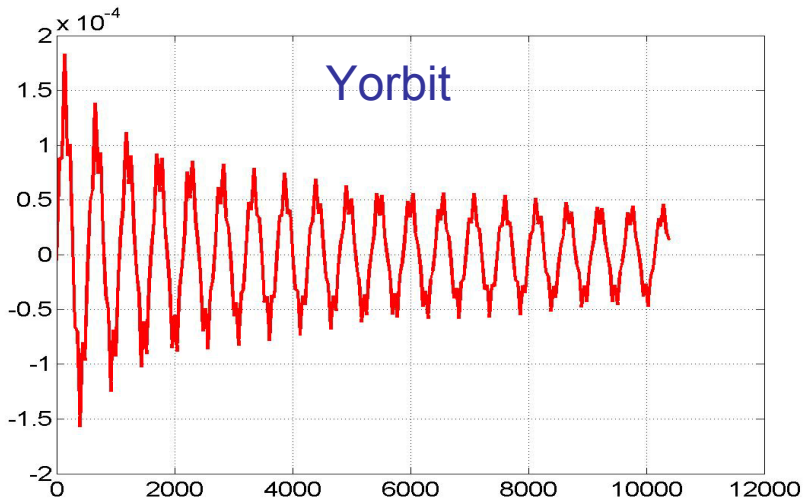
ILC LINAC

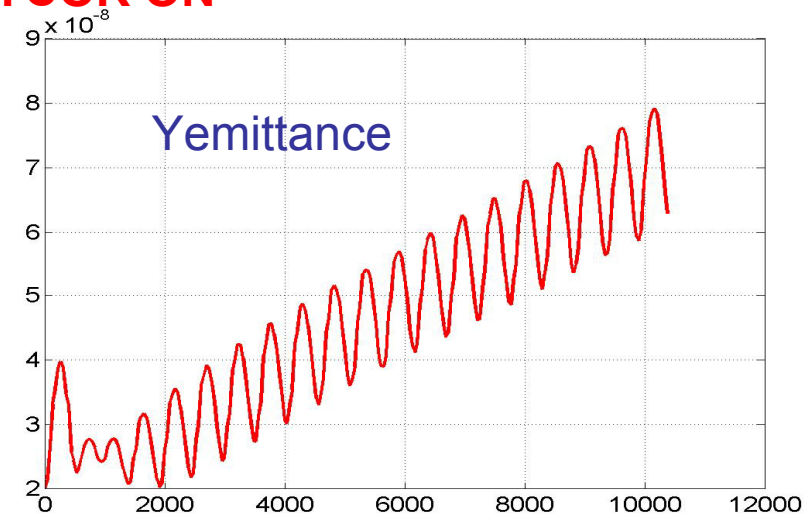
- Initial condition (x,y,xp,yp,detax,detay,detapx,detapy) = (0,0,0,0,0,0,0,0)





GKICK ON and YCOR ON

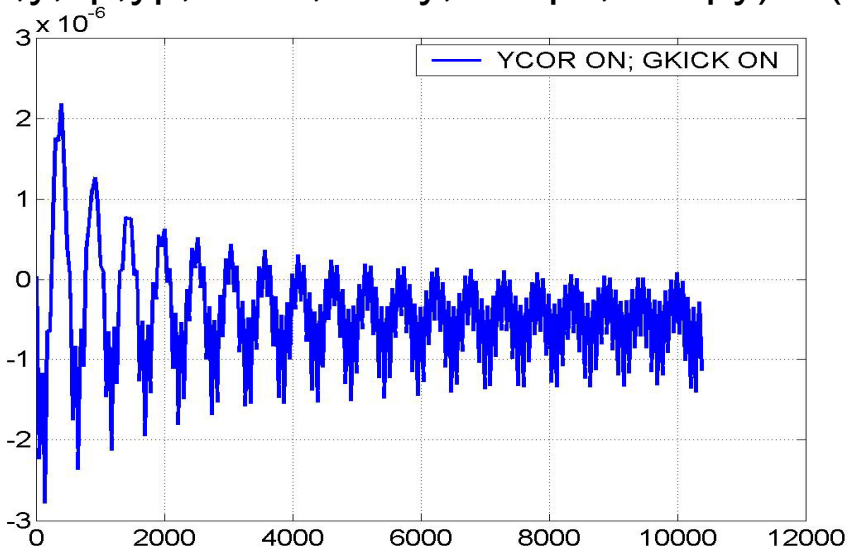


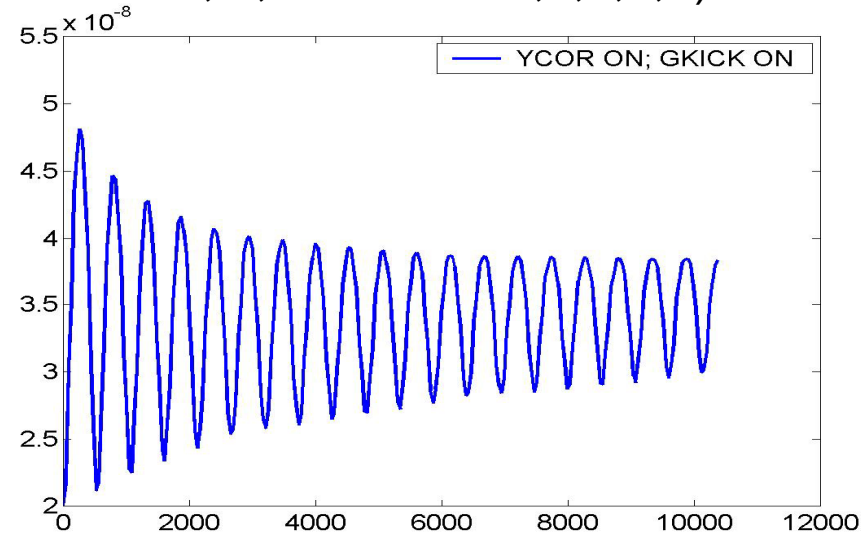


ILC LINAC

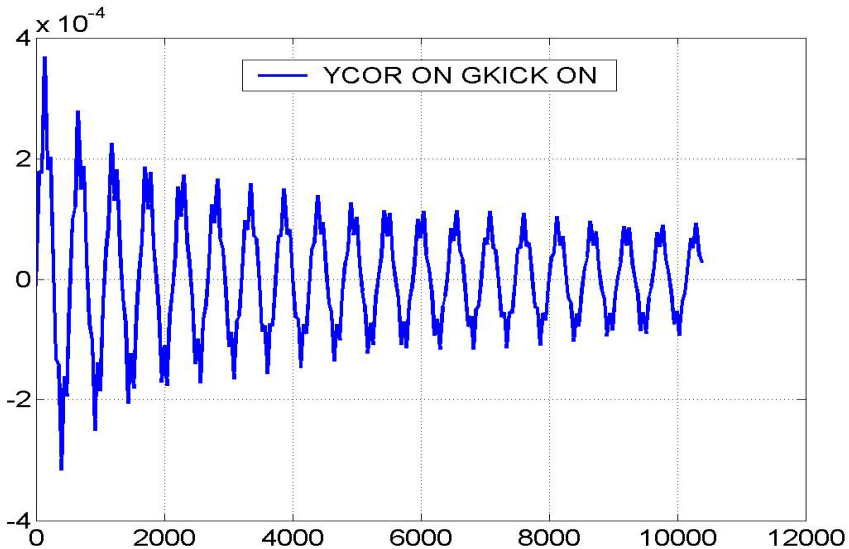
- Initial condition

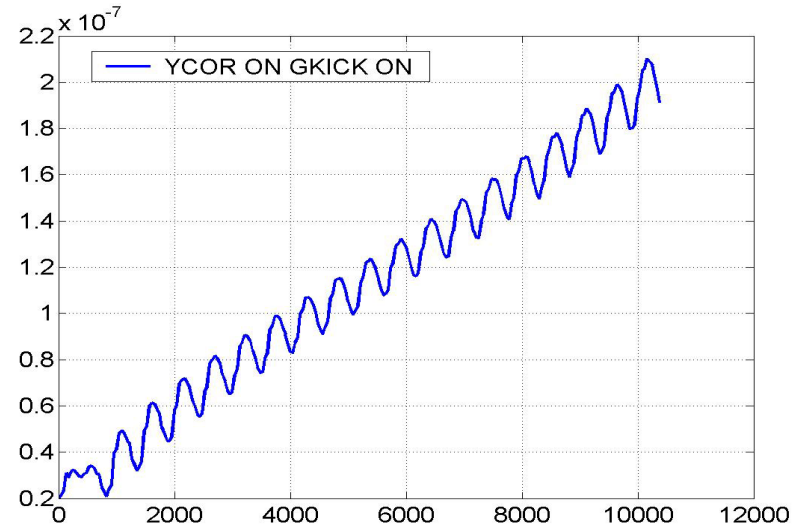
(x,y,xp,yp,detax,detay,detapx,detapy) = (0, 18.146E-6, 0, -2.4347E-6,0,0,0,0)





(x,y,xp,yp,detax,detay,detapx,detapy) = (0, -18.146E-6, 0, +2.4347E-6,0,0,0,0)





Before completion

- Check the sign of the gkick implementation
- Dispersion functions’ checking
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