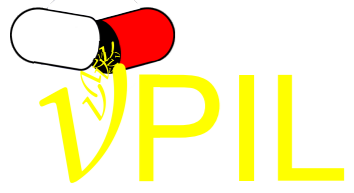


# FFAG update

JB. Lagrange

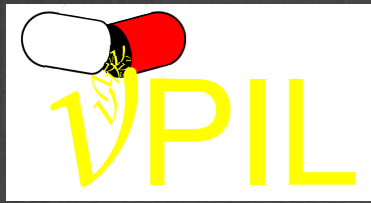
Imperial College, UK  
FNAL, USA



# Outline

● Dispersion suppressors

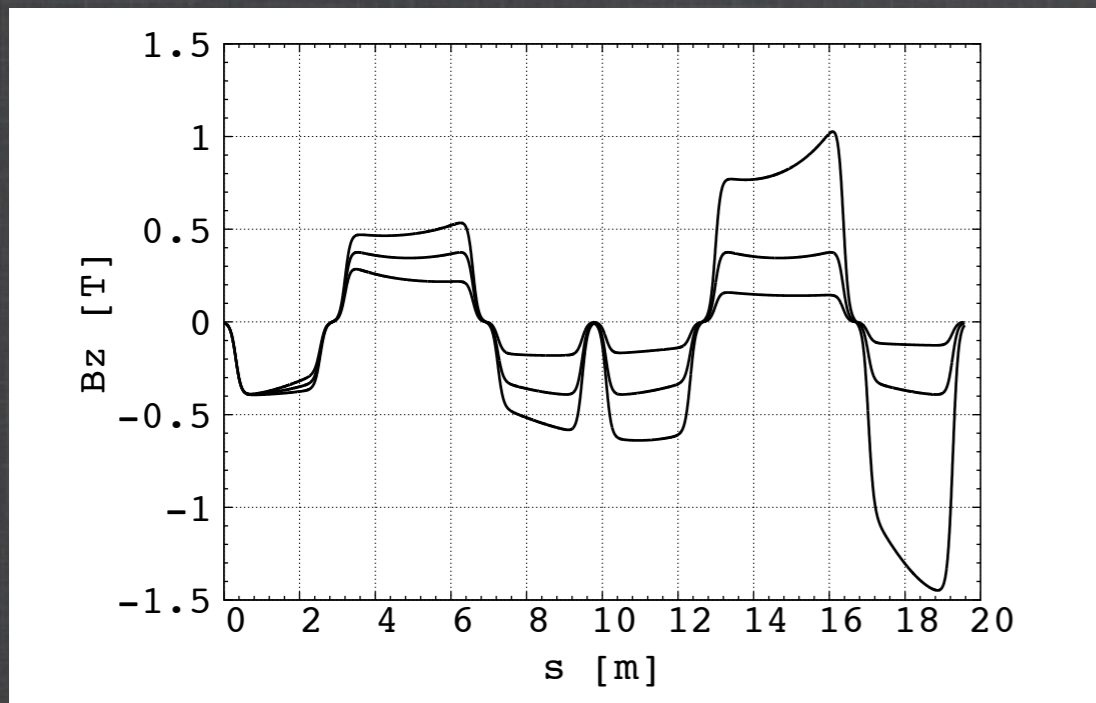
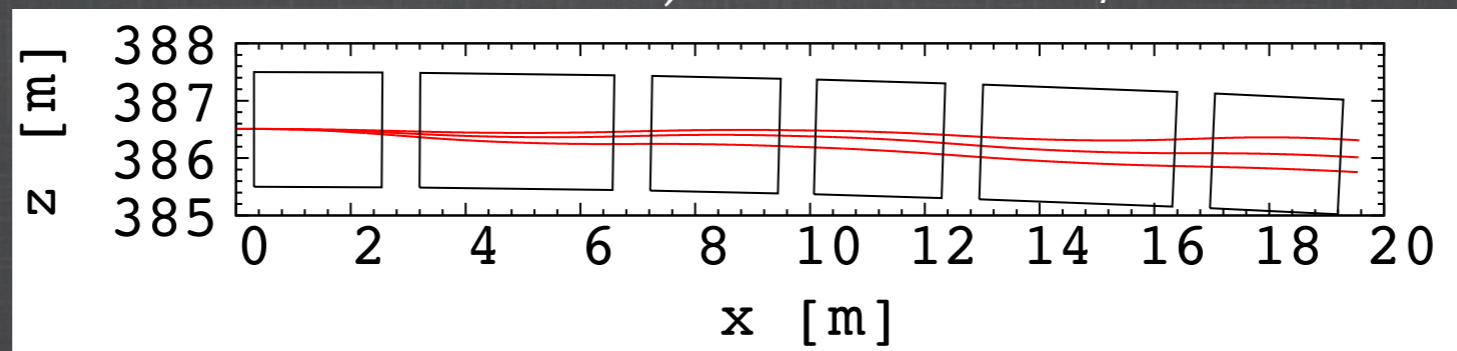
● Tunability (dispersion suppressor)



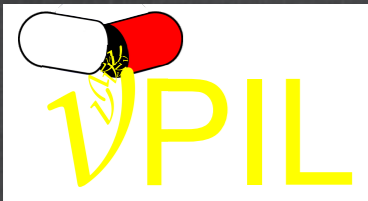
# dispersion creator v3.0

(Lattice 9, 9.1, 9.2)

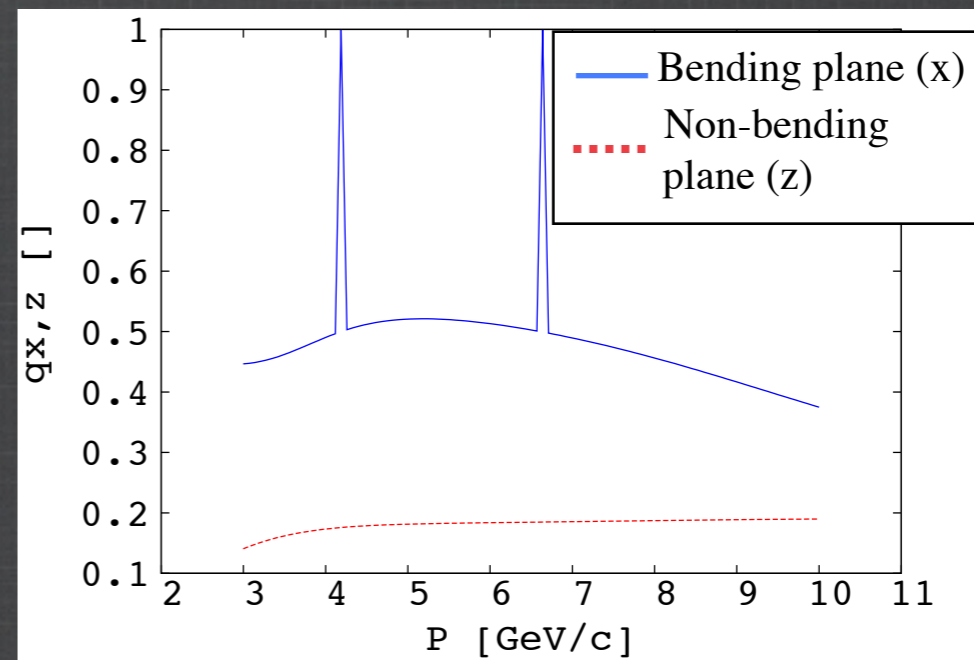
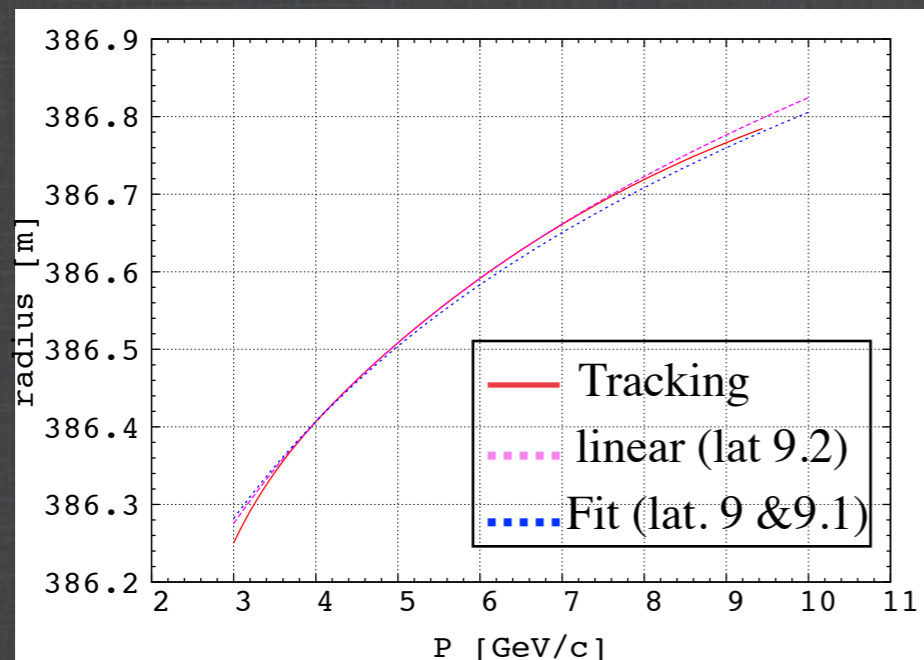
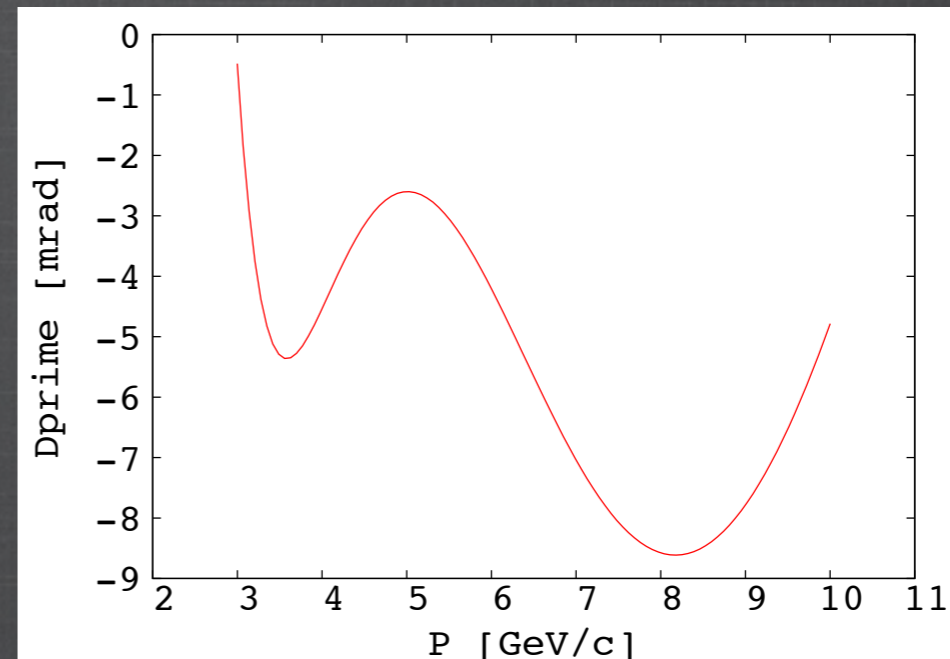
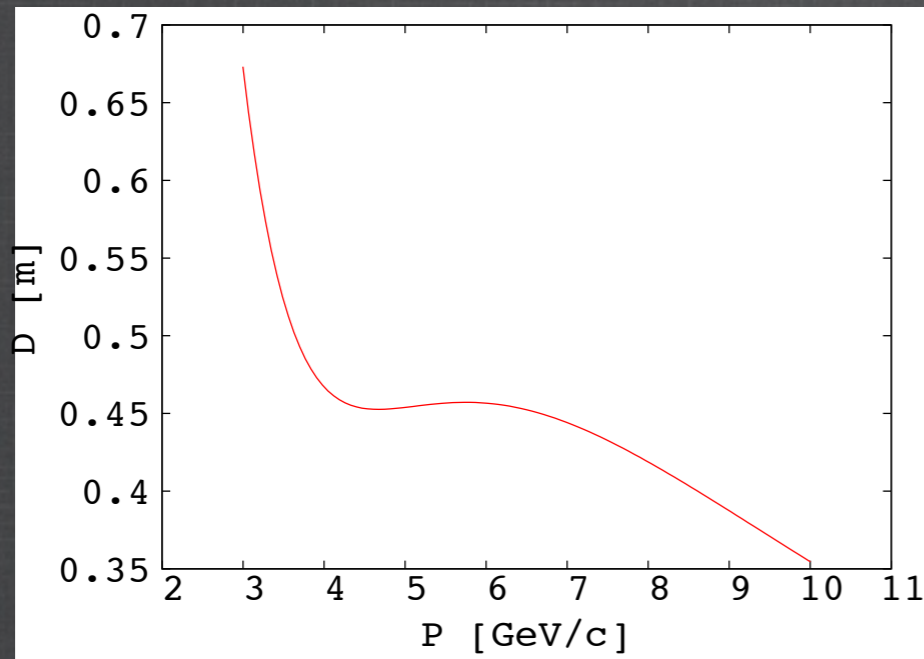
Trajectories of 3 GeV/c, 5 GeV/c (matching momentum) and 10 GeV/c



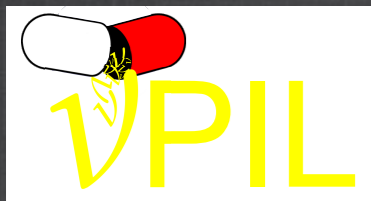
| Parameter                        | Value        |
|----------------------------------|--------------|
| radius (5 GeV/c)                 | 386.5        |
| k                                | 1695         |
| periodic dispersion [m]          | 0.23         |
| final dispersion [m]             | 0.4          |
| final excursion (3-10 GeV/c) [m] | 0.55         |
| length [m]                       | 20           |
| periodic beta [m] (H&V)          | 11.32        |
| phase advance (H/V)              | (0.52, 0.18) |
| max magnetic field [T]           | 1.5          |



# dispersion creator v3.0

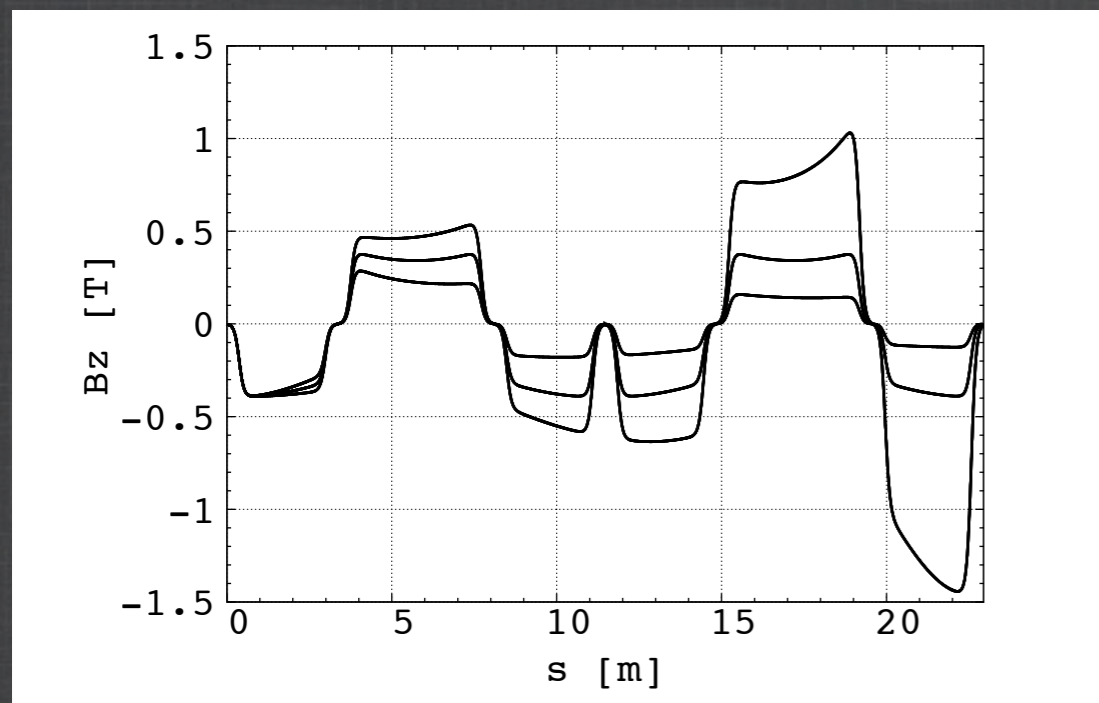
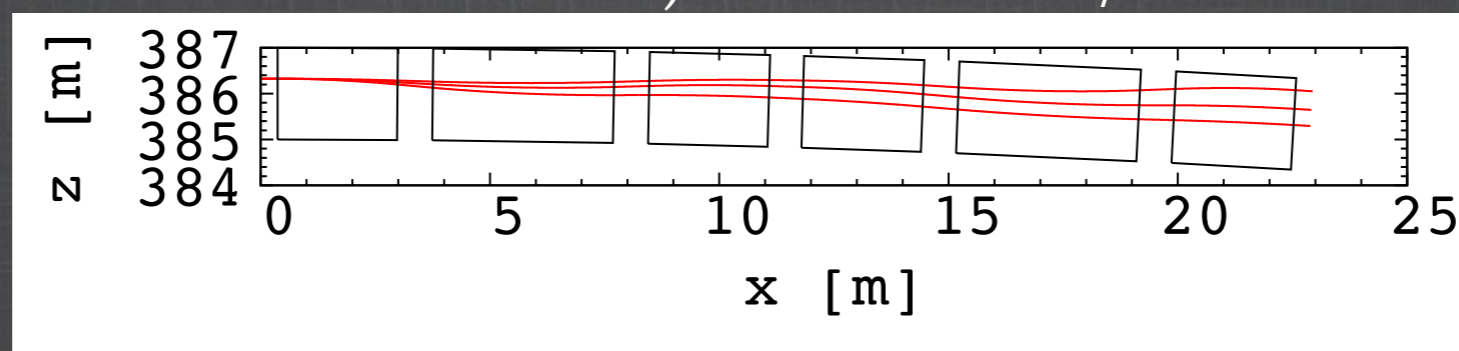


(5 GeV/c matching momentum)

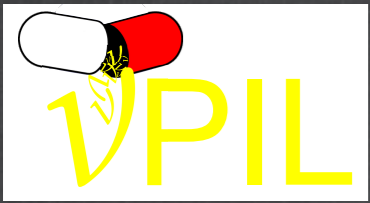


# dispersion creator v4.0

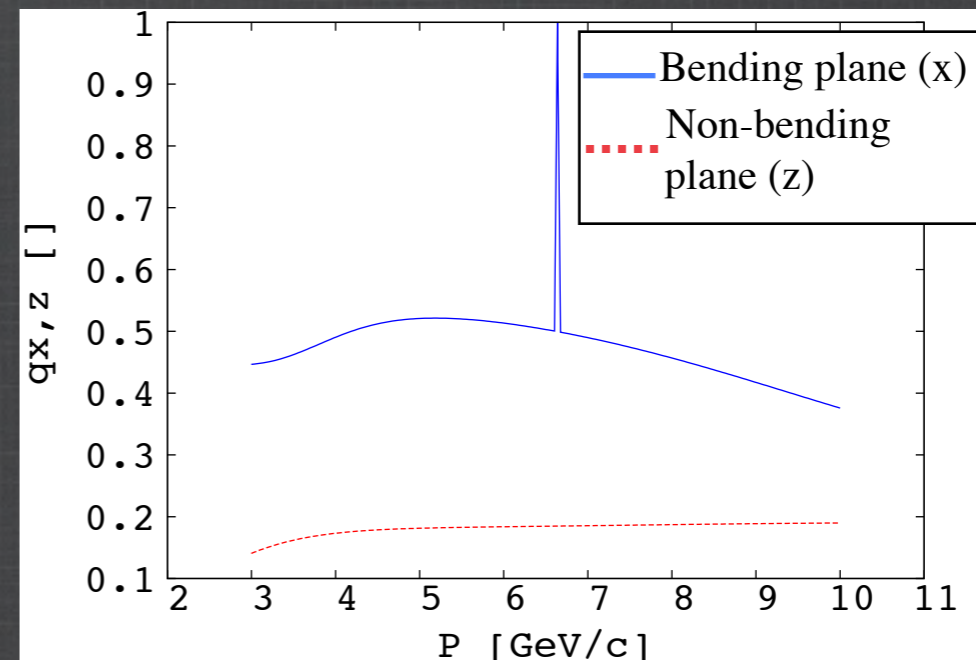
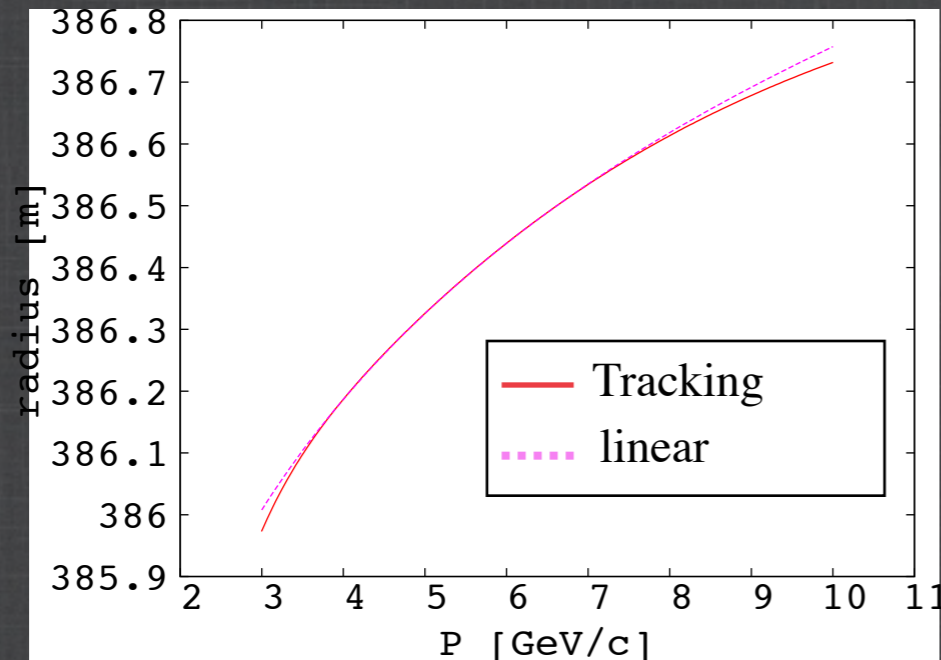
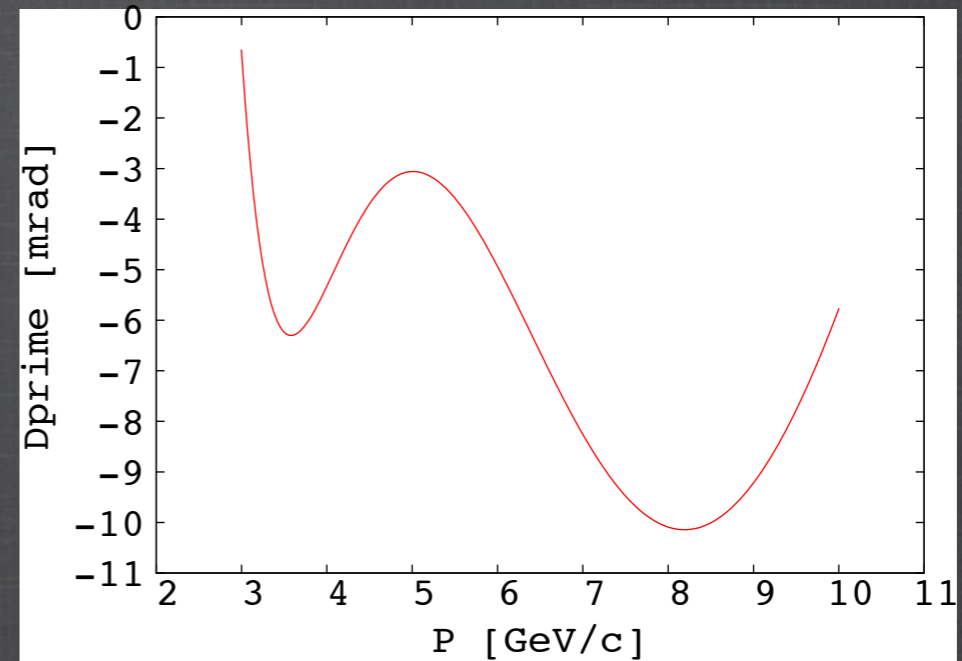
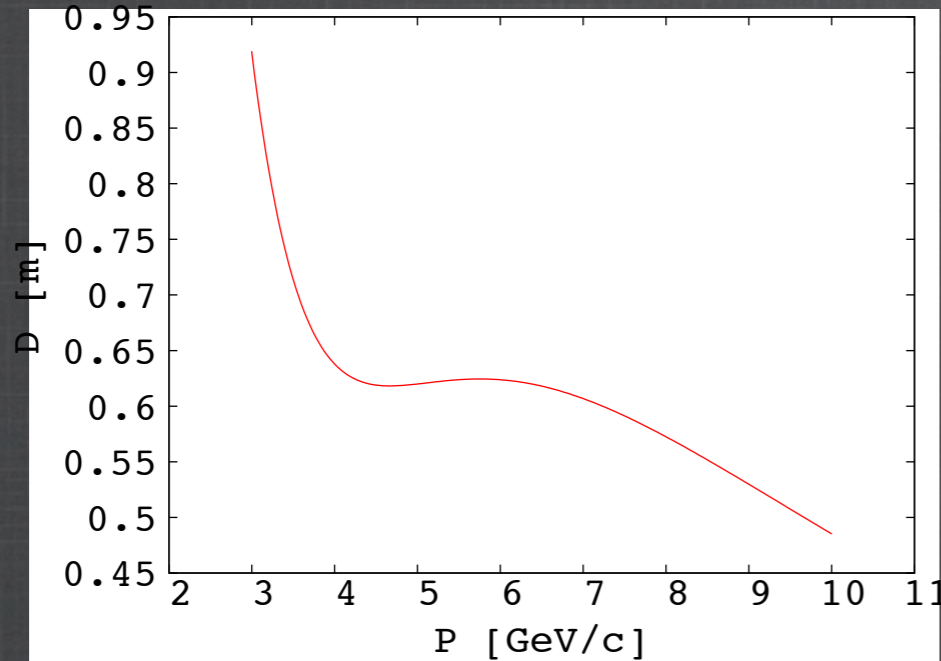
Trajectories of 3 GeV/c, 5 GeV/c (matching momentum) and 10 GeV/c



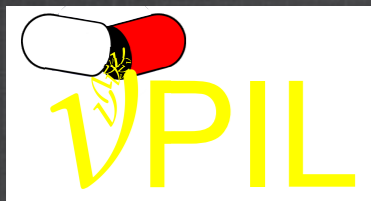
| Parameter                        | Value        |
|----------------------------------|--------------|
| radius (5 GeV/c)                 | 386.3        |
| k                                | 1240         |
| periodic dispersion [m]          | 0.31         |
| final dispersion [m]             | 0.62         |
| final excursion (3-10 GeV/c) [m] | 0.75         |
| length [m]                       | 23           |
| periodic beta [m] (H&V)          | 13.23        |
| bending plane acceptance (/v3.0) | 1.6          |
| phase advance (H/V)              | (0.52, 0.18) |
| max magnetic field [T]           | 1.5          |



# dispersion creator v4.0

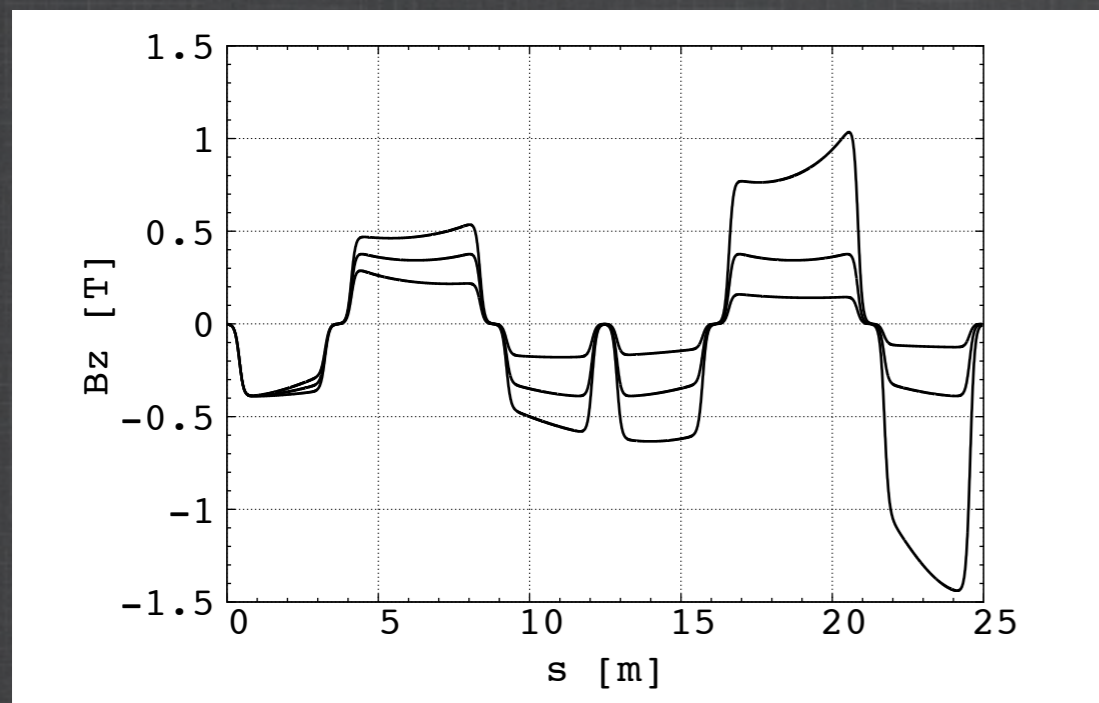
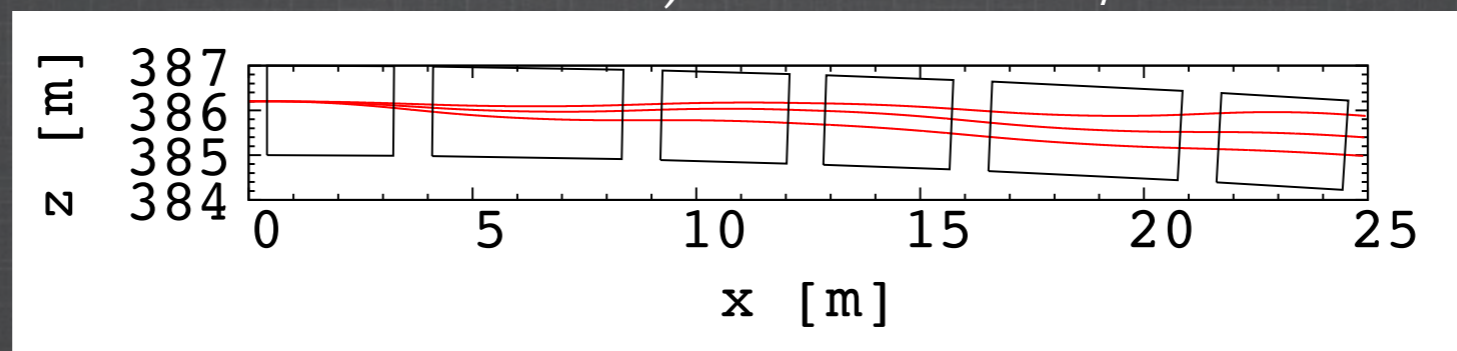


(5 GeV/c matching momentum)

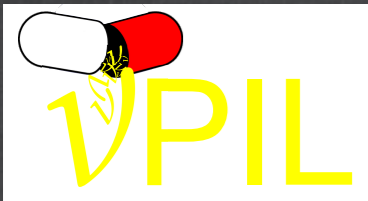


# dispersion creator v5.0

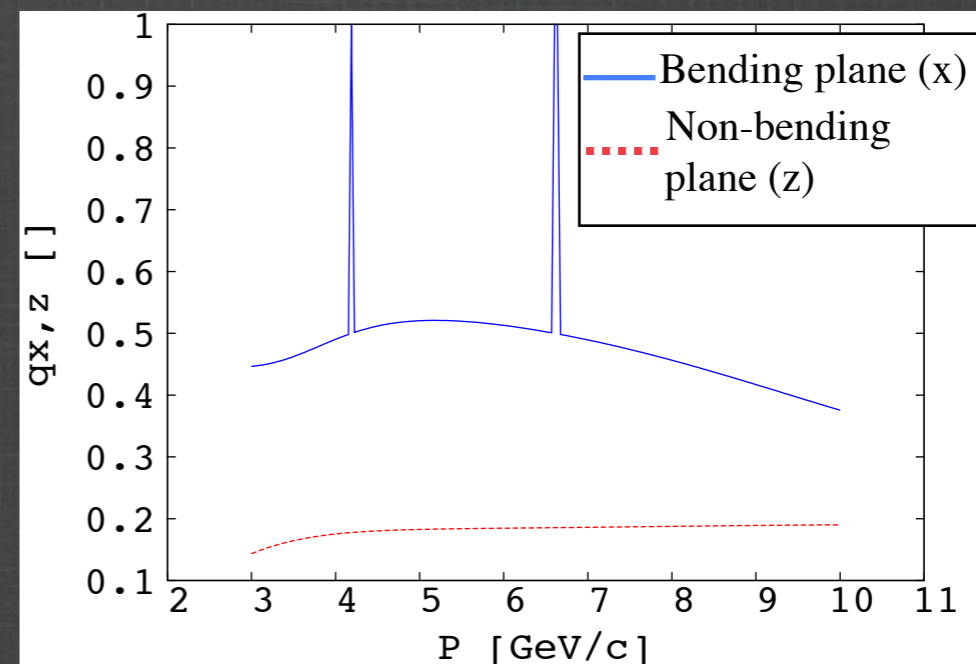
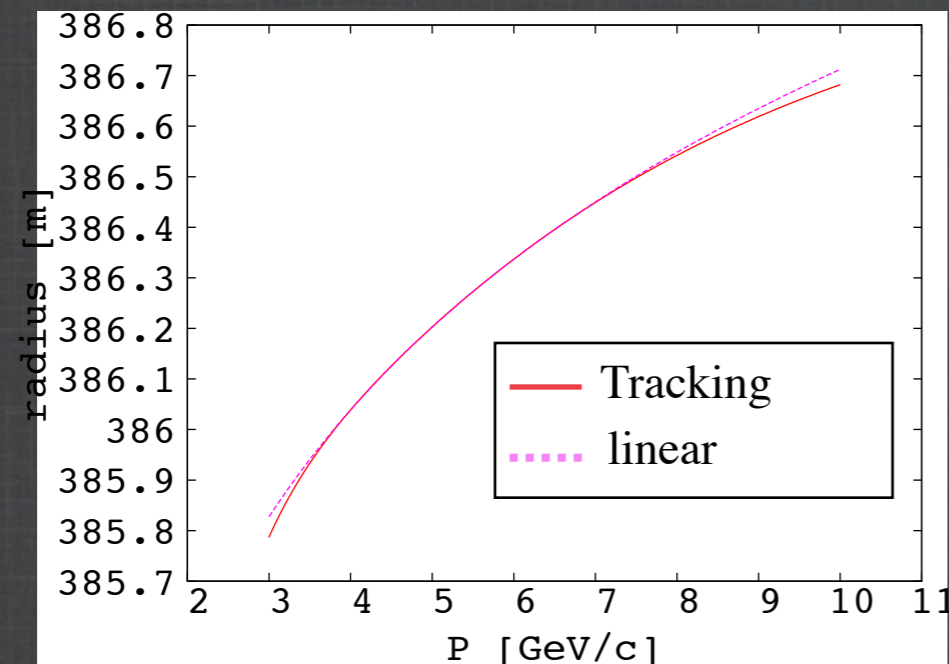
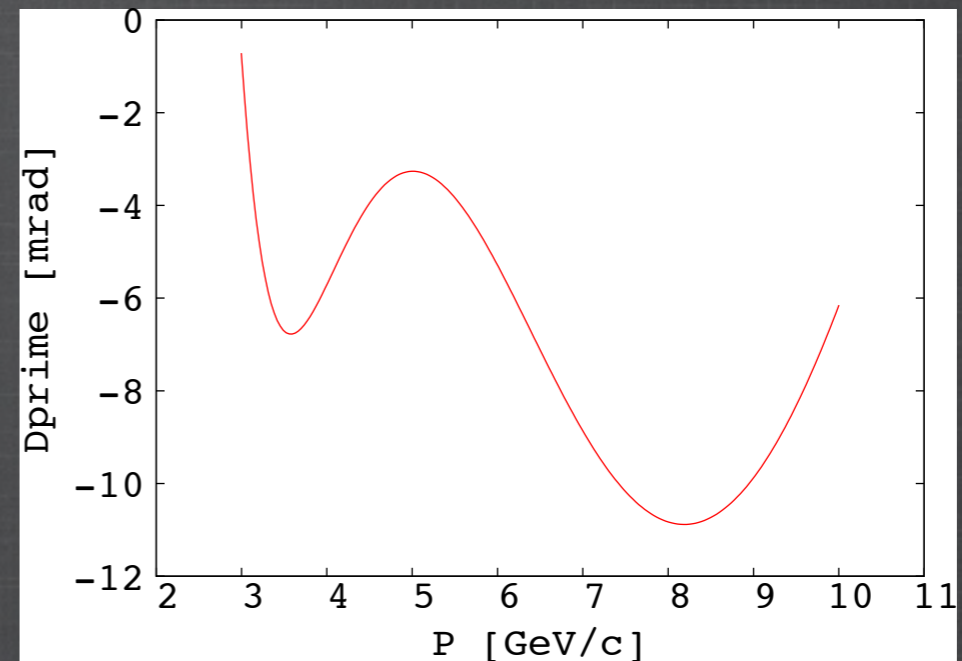
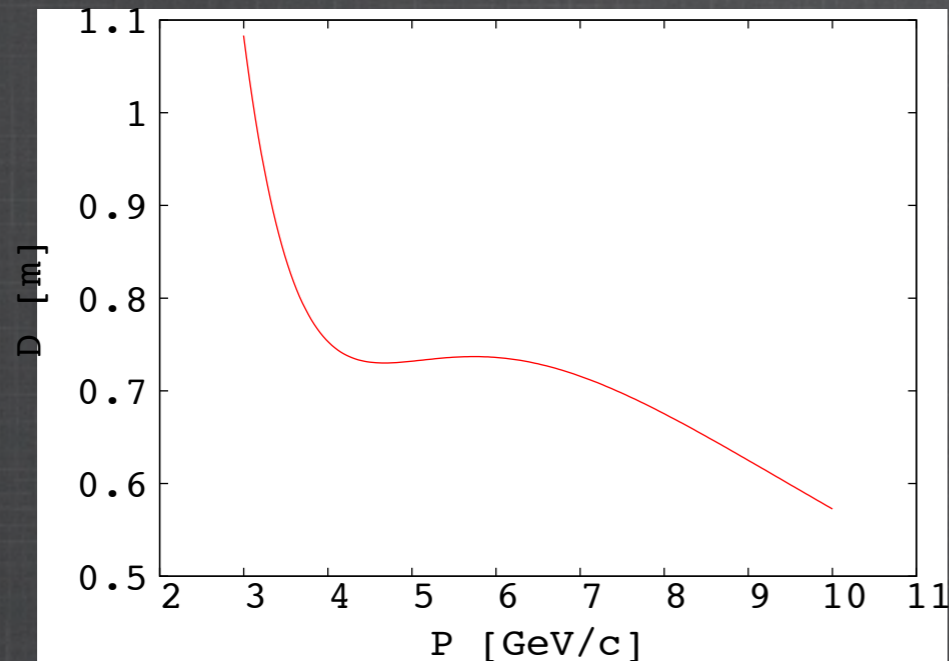
Trajectories of 3 GeV/c, 5 GeV/c (matching momentum) and 10 GeV/c



| Parameter                        | Value        |
|----------------------------------|--------------|
| radius (5 GeV/c)                 | 386.1        |
| k                                | 1050         |
| periodic dispersion [m]          | 0.37         |
| final dispersion [m]             | 0.74         |
| final excursion (3-10 GeV/c) [m] | 0.90         |
| length [m]                       | 25           |
| periodic beta [m] (H&V)          | 14.37        |
| bending plane acceptance (/v3.0) | 2.0          |
| phase advance (H/V)              | (0.52, 0.18) |
| max magnetic field [T]           | 1.5          |

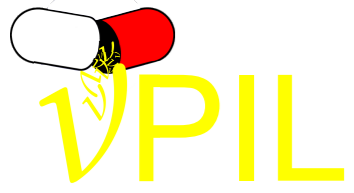


# dispersion creator v5.0



(5 GeV/c matching momentum)

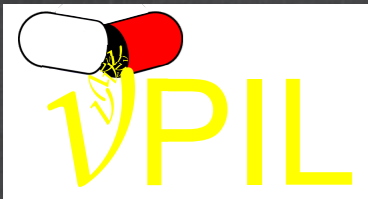




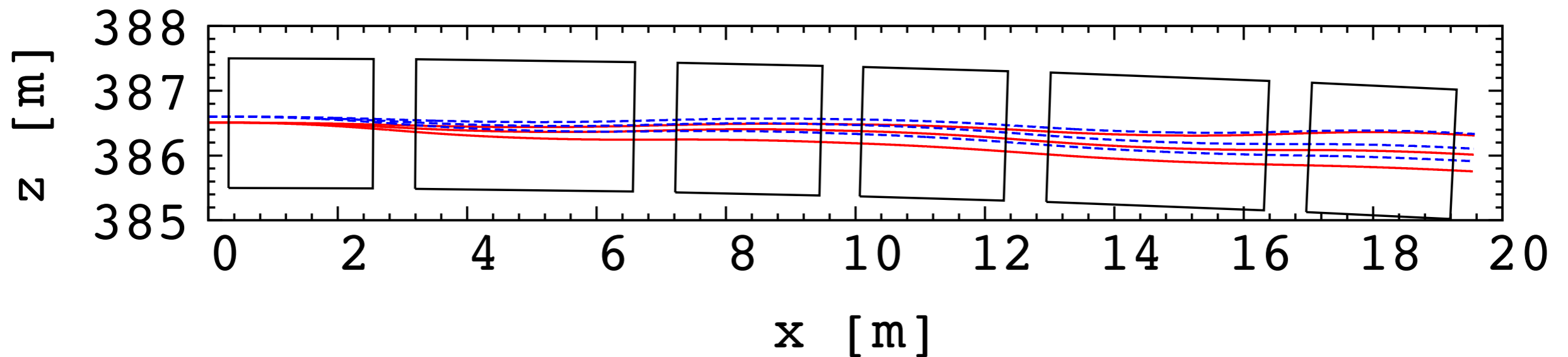
# Outline

- Dispersion suppressors

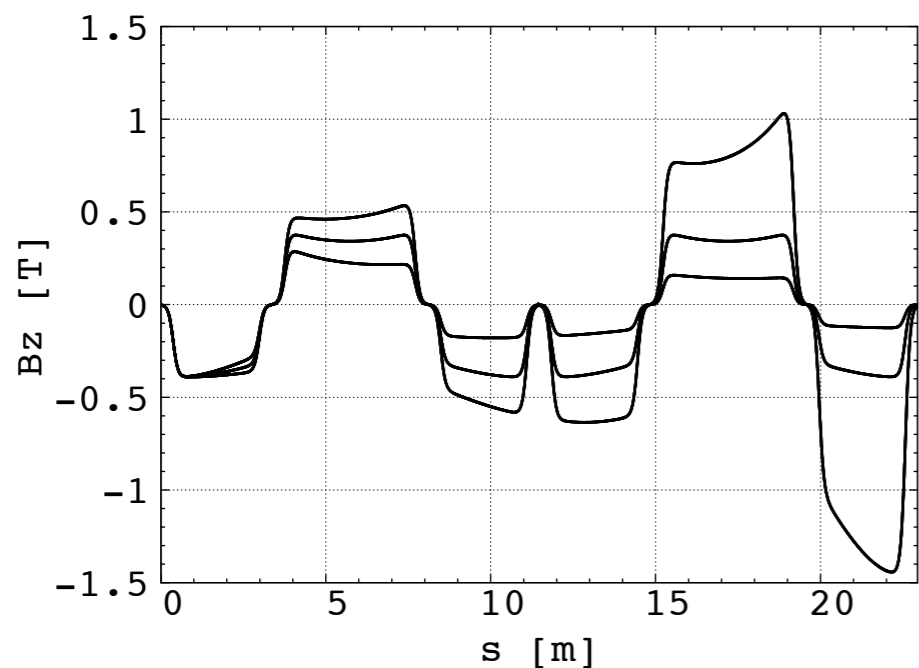
- Tunability (dispersion suppressor)



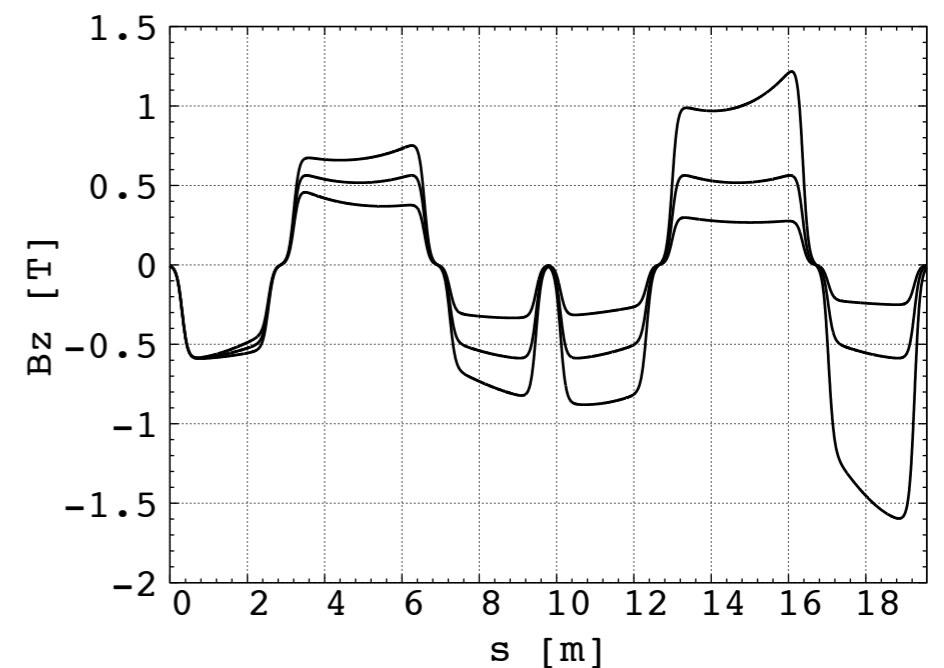
# dispersion creator v3.0

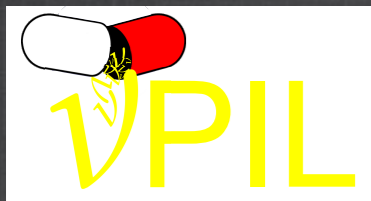


Trajectories of 3 GeV/c,  
5 GeV/c (matching  
momentum) and 10  
GeV/c (red)



Trajectories of 5 GeV/c,  
7.5 GeV/c (matching  
momentum) and 12.5  
GeV/c (blue)





# To do list

- Matching for Bend+decay pipe (all lattices)
- FODO design centred on 5 GeV/c
- Full FFAG design with beam line
- Performance of Full FFAG
- Hybrid design
- Horn design for FFAG
- Tracking for protons, K, pi-,...