Optics for Separation Option with Lambertson Septum

Work in progress:

- further fit of geometry is needed
- there are overlapped elements in two lines: more work; mirror plate quadrupoles (?)
- chromatic properties have to be studied: nonlinear elements
- deflection sections are not isochronous (R_56 is not zero)
- for design and optimization the fast and convenient design/simulation code is desirable

Usage of Lambertson septum

Vert(hor) kick & hor(vert) separation:

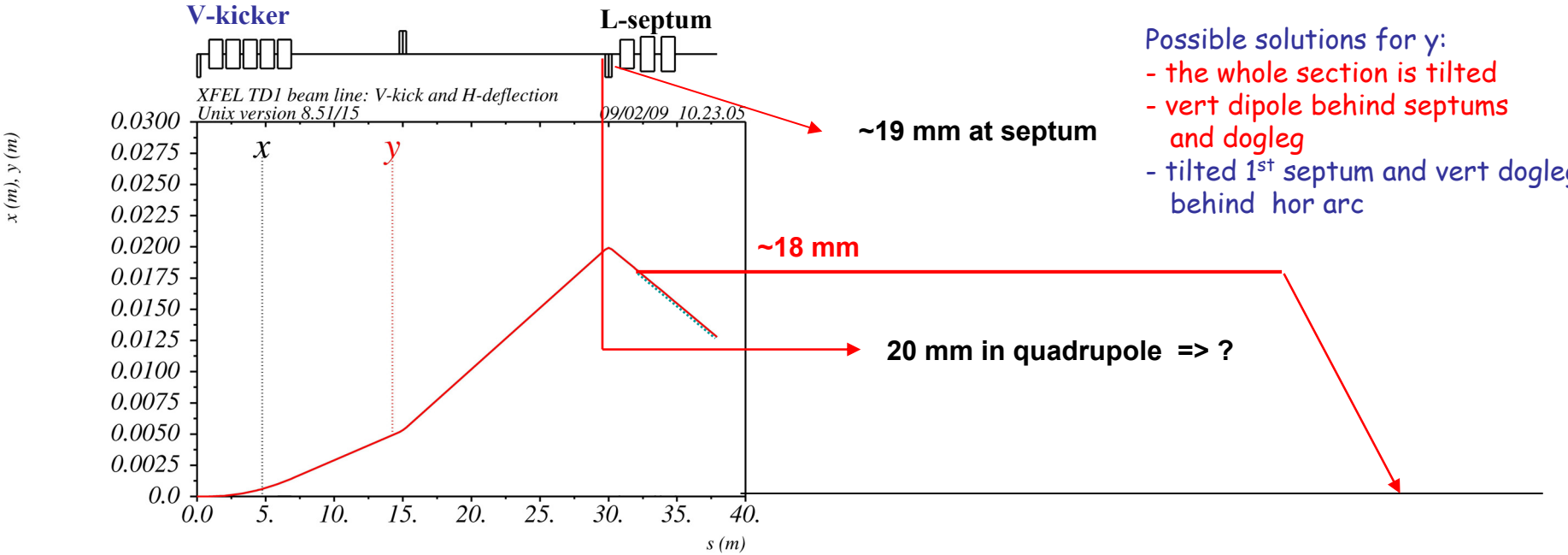
- both hor and vert dispersions
- shift of beam trajectory in plane perpendicular to separation plane

Solutions are looking:

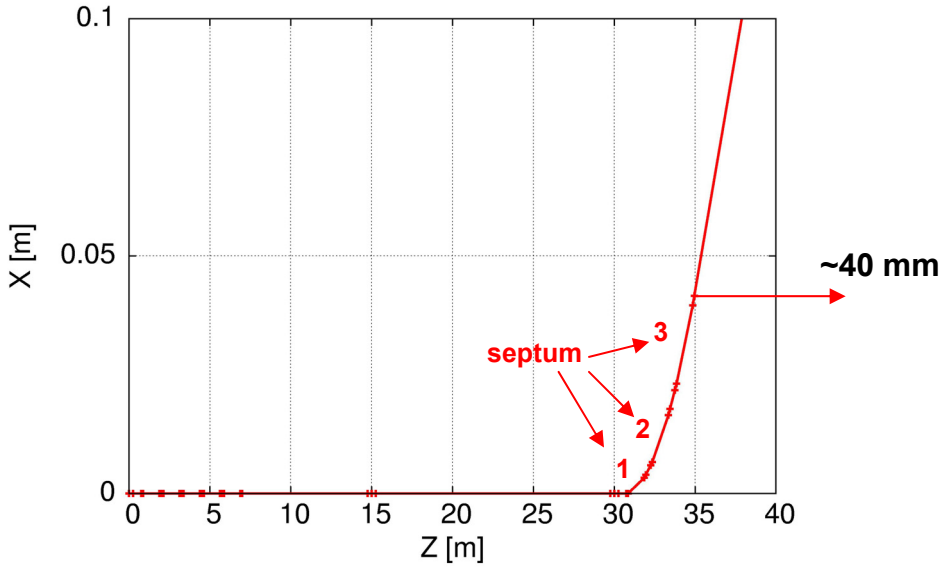
- Focusing lattice in straight beam line:
  20 m FODO => 30 m FODO

- Geometry is fixed:
  - 1-st deflection is to dump beam line
  - angle and z(td2,td1) of TD1 beam line (to SASE2)
  - angle and z(td2,t20) of T20 beam line (future line)
- V-kick and H-deflection: TD1 and T20
- H-kick and V-deflection: dump line

Trajectory: TD1 Example



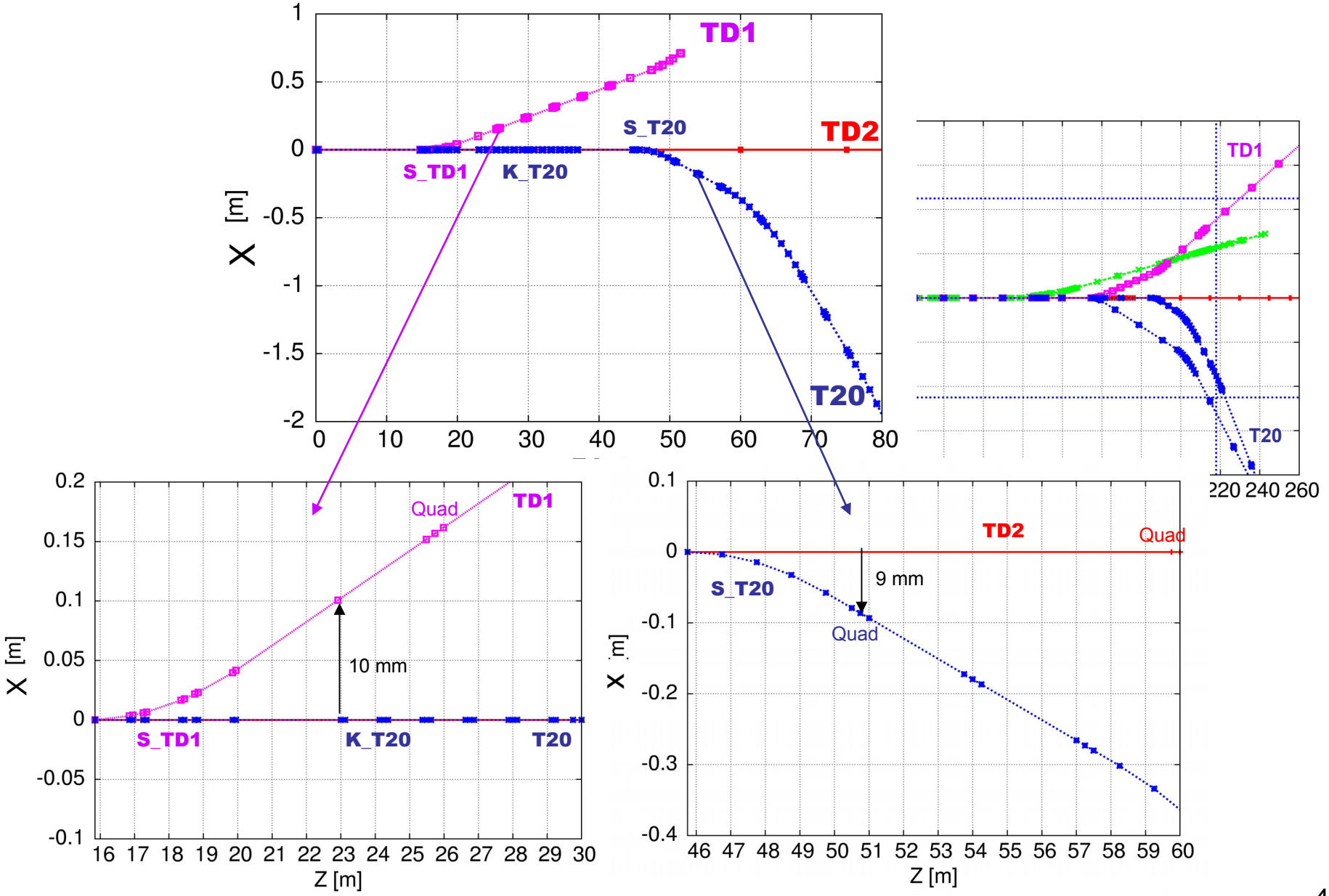
Possible solutions for y:
- the whole section is tilted
- vert dipole behind septums and dogleg
- tilted 1st septum and vert dogleg behind hor arc



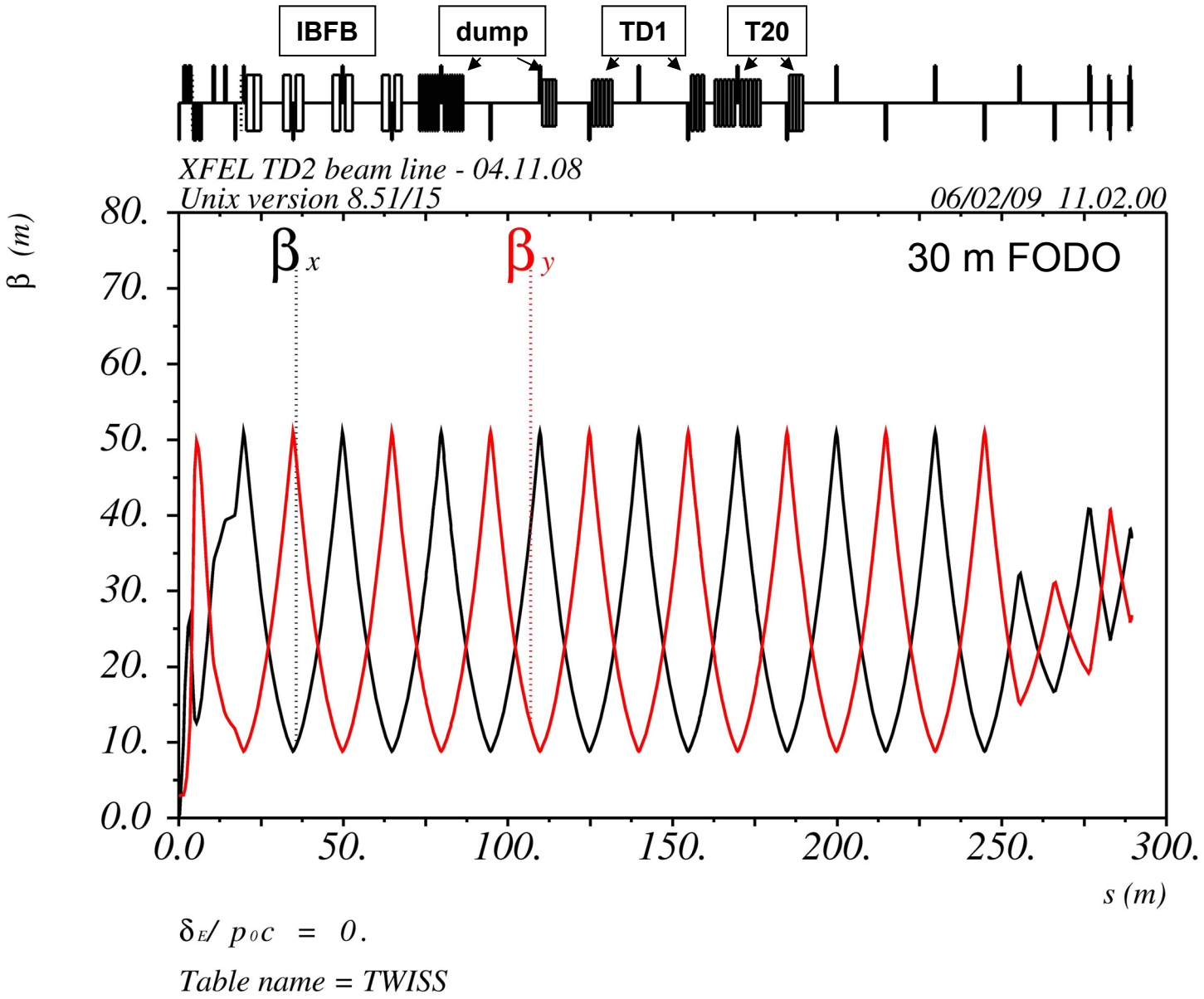
Kicker:
N = 5
L = 1 m
Kick angle = 0.1 mrad

Lambertson septum:
L = 1 m
B = 0.5 T at 22 GeV
1-st septum: tilted

Horizontal Separation: TD2, TD1 & T20



TD2 beam line: Straight line



TD1 beam line: To SASE2