

# Field in Snake Model

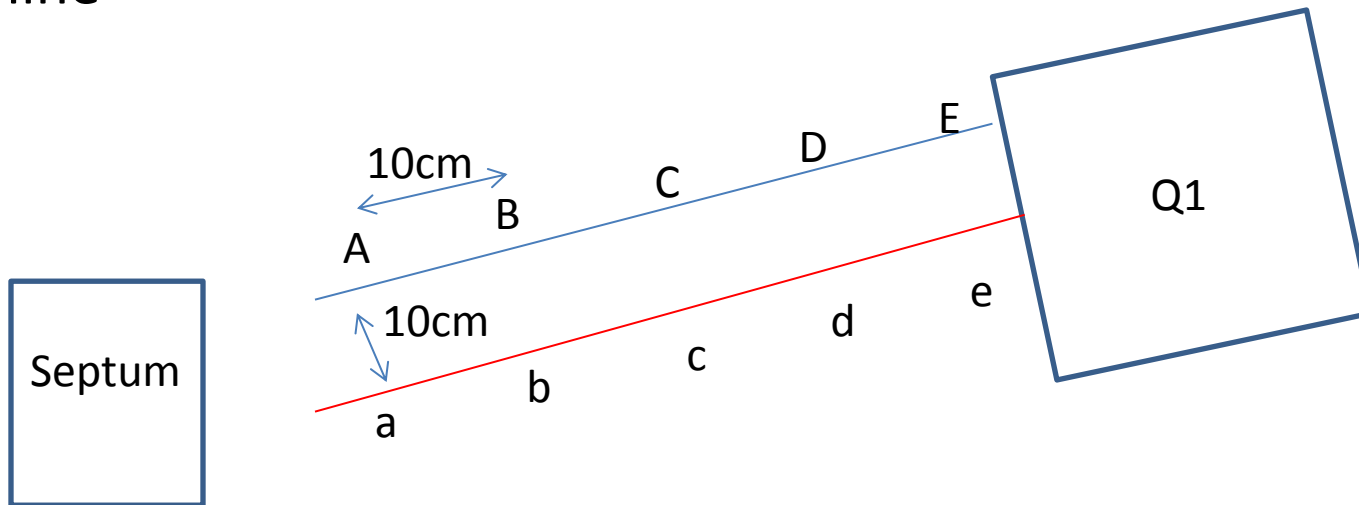
Field Overlap Septum vs Q1

Jie Liu

05/20/2015

# Field Overlap

- Assume no activation between septum and Q1
- Point a (b, c, d, e), located 40cm (30, 20, 10, 0cm) horizontal away from Q1 entrance face, also **on the center red line**
- Point A (B, C, D, E), located 40cm (30, 20, 10, 0cm) horizontal away from Q1 entrance face, all with 10cm away from center line



Septum field at a, b, c, d, e vs Q1 field at A, B, C, D, E

# Field comparison

- Septum field at a, b, c, d, e vs Q1 field at A, B, C, D, E

Septum field	point	Bx(T)	By(T)	Bz(T)
	a	0.6303	0.0241	-0.0015
	b	0.2909	0.0116	0.0001
	c	0.1299	0.0052	0.0004
	d	0.0594	0.0023	0.0002
	e	0.0286	0.0099	0
Q1 field	A	0	0	0
	B	0	0	0
	C	0	-0.0008	0.0030
	D	-0.0003	-0.0071	0.0416
	E	-0.0042	-0.0358	0.2381

Field explained in the coordinate system at target (but left handed)  
 By forward, Bx vertical down, Bz horizontal in

# Conclusion

- Snake model modified to take care the overlap field for septum and Q1
- Q1 field drop fast, almost 0 for area 20cm away from Q1 entrance plane
- Septum field still >200 Gauss at the Q1 entrance, comparable with Q1 field at 10cm away from Q1 entrance plane
- Current septum field map (  $-1000 < y < 1000$ mm,  $-370 < x < 370$ mm,  $-90 < z < 90$ mm), too small for both x, z direction
  - Q1 aperture is R ~15cm, field map cannot cover z direction acceptance
  - X direction also could not cover due to offsets
- Need new large area septum field map