Results of SNAKE raytracing in Tosca field D. Sober 26-Aug-2013

Dependence of position at focal plane on initial angle at radiator. Trajectories were generated at the nominal object point (at the radiator), with $\theta_{hor} = 0, \theta_{ce}, 2\theta_{ce}$ and $\theta_{vert} = 0, \theta_{ce}, 2\theta_{ce}$, where θ_{ce} = characteristic electron angle = $(E_0 - E_e)/E_e \cdot (m_e c^2 / E_0)$.

	Δx_{FP} (deviation from on-axis ray) for		Δz_{FP} (deviation from on-axis ray) for	
E_e	$\theta_{hor} = \theta_{ce}$	$\theta_{hor} = 2\ \theta_{ce}$	$\theta_{vert} = \theta_{ce}$	$\theta_{vert} = 2\ \theta_{ce}$
[GeV]	[mm along focal plane]		[mm vertical]	
0.2	-10.52	-20.39	22.0	–
0.3	-6.34	-12.19	15.6	31.1
0.5	-3.46	-6.71	10.1	20.1
1	-1.57	-3.04	5.6	11.1
2	-0.46	-0.92	3.0	6.0
3	-0.09	-0.16	2.0	4.0
4	0.13	0.27	1.5	3.0
5	0.23	0.45	1.1	2.2
6	0.27	0.56	0.9	1.7
7	0.30	0.58	0.7	1.3

Important facts:

1. Small values Δx_{FP} mean (roughly) that the nominal focal plane is at the right place.
2. The vertical displacements are larger (by factors of 2-5) than my previous crude TRANSPORT estimates – probably not surprising in view of the fact that our exit fringe field is distributed over such a long path.