



Draft Muon Collider Parameters Version 1.1
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12/1/11

325 MHz HCC Parameters

stages	z	b1	b'	Bz	λ	f	ϵ_{\perp}	ϵ_{\parallel}	transm.
	m	T	T/m	T	m	MHz	mm	mm	
1	0	0	0	0	0	0	20.4	42.8	1.0
2	40	1.3	-.5	-4.2	1	325	5.97	19.7	.92
3	49	1.4	-.6	-4.8	.9	325	4.01	15	.86
4	129	1.7	-.8	-5.2	.8	325	1.02	4.8	.73
5	219	2.6	-2	-8.5	.5	650	.58	2.1	.66
6	243	3.2	-3.1	-9.8	.4	650	.42	1.3	.64
7	273	4.3	-5.6	-14.1	.3	650	.32	1	.62
8	303	4.3	-5.6	-14.1	.3	1300	.34	1.1	.6

stage	R_c	λ	Bz	R1	R2	n	Lc	j	L
	m	m	T	m	m		m	A/mm ²	m
1	0 → 0.28	1.9	0.55	0.35	0.4	20	0.025	220 → 194	5.5
2	.28	1	.55	.35	.4	20	.025	194	
6	.16	.4	6.73	.18	.28	20	.01	332.9	

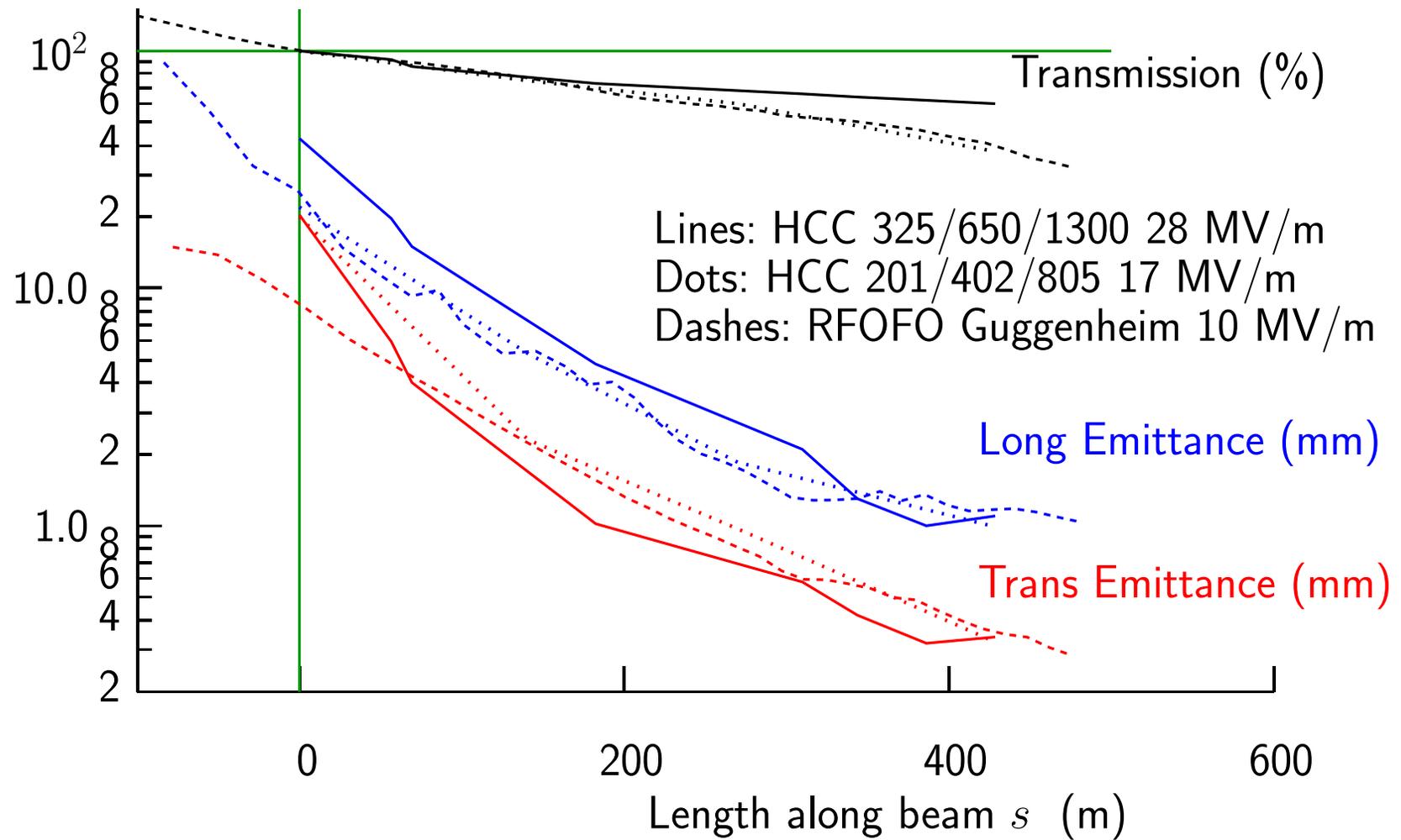
200 MHz HCC Parameters

stage	z	λ	Rref	Bz	b1	b'	f	E_s	L_{cav}	P_{peak}	ϵ_{\perp}	ϵ_{\parallel}	transm.
	m	m	cm	T	T	T/m	MHz	MV/m	cm	MW/m	mm	mm	%
1	100	1.0	16	4.21	1.24	0.21	200	16	10	43			
2	191	0.7	11	6.01	1.78	0.42	400	16	7	23			
3		0.4	6	10.7	3.11	1.29	800	16	4	15			
4	301	0.3	4.8	14.0	4.15	2.29	800	16	4	15			

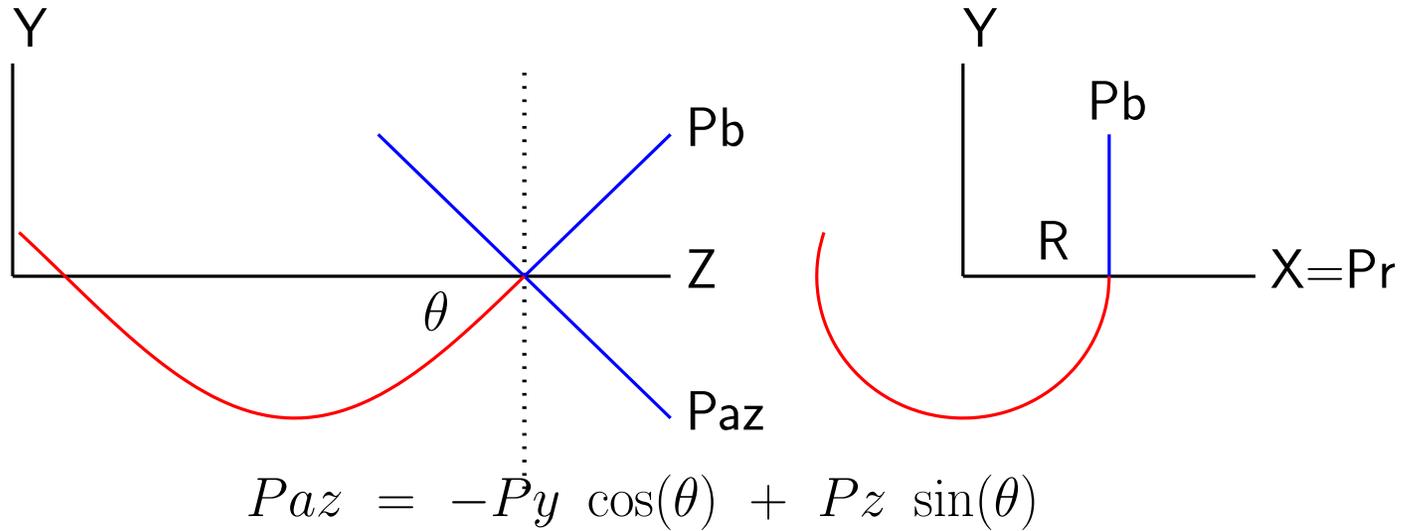
HCC parameters and performance

		HCC	RFOFO	
Muon Momentum	p	200	207	MeV/c
Ave Hydrogen density	ρ_{H2}	0.013	0.011	gm/cm ²
Gas pressure	P	20	1	Atm.
Absorber temperature	T	30	20	Deg Kelvin
rf gradient	\mathcal{E}	28	15.5	MV/m
rf gradient along beam	$\mathcal{E}(s)$	19.8	15.5	MV/m
Ave beam gradient	\mathcal{E}_s	19.8	10.5	MV/m
rf phase	ϕ	20	32	deg.

performance



HCC coordinates



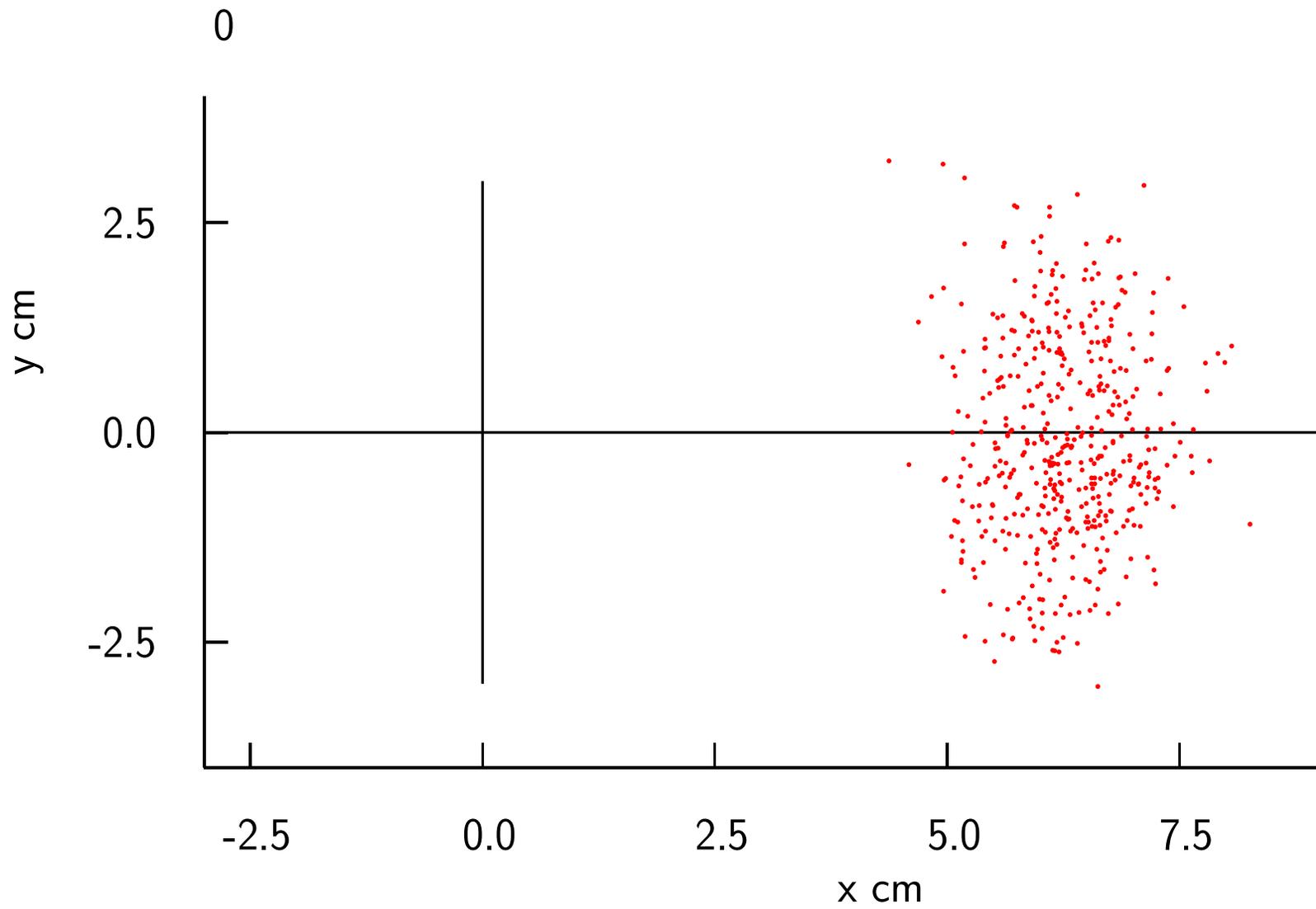
$$P_r = P_x$$

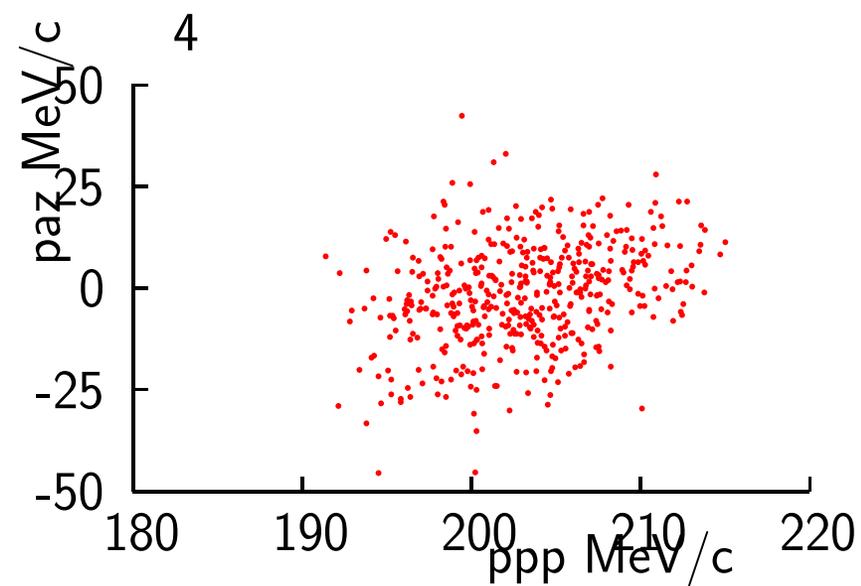
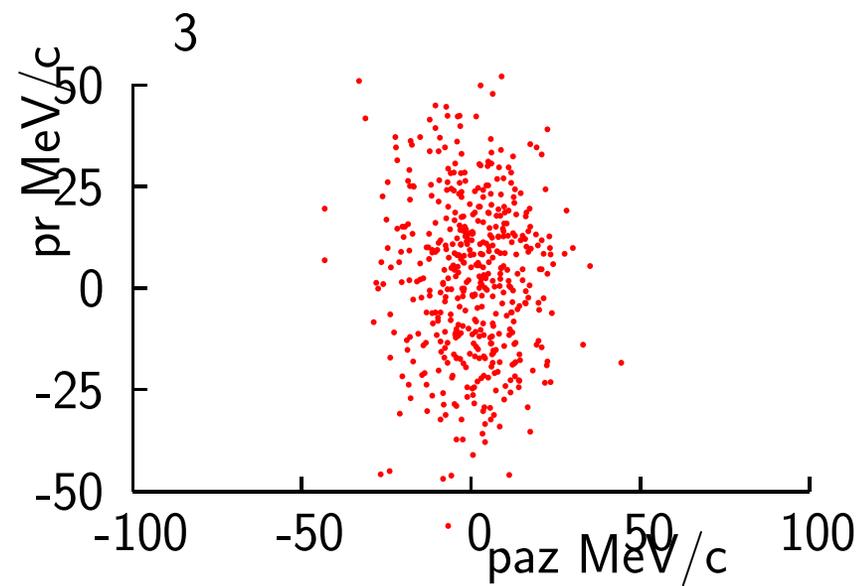
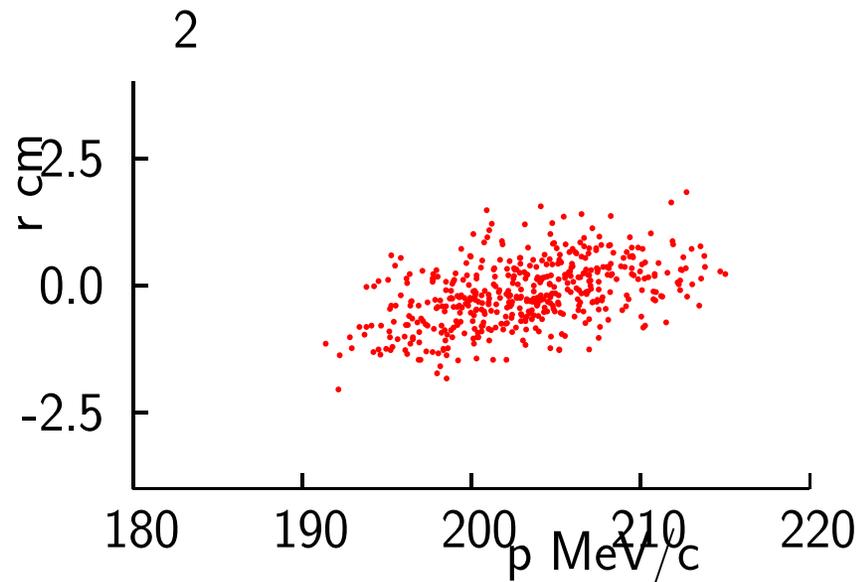
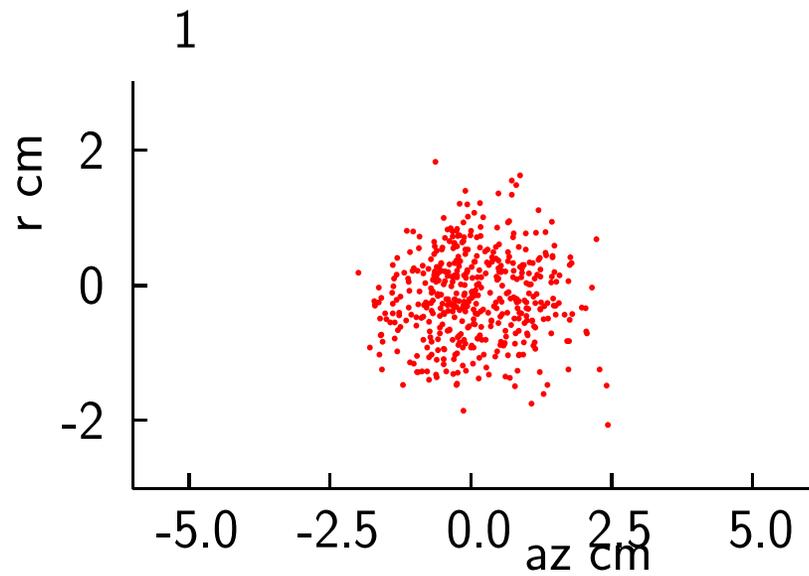
$$A_z = -Y \cos(\theta)$$

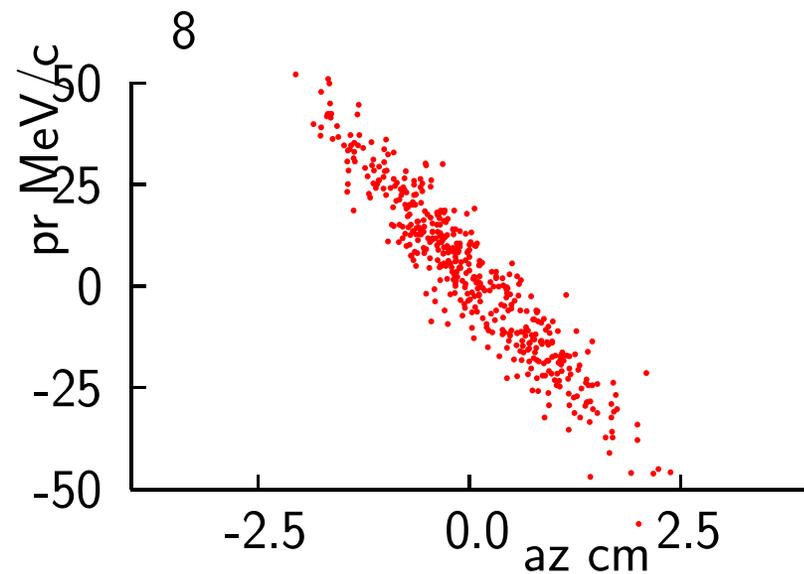
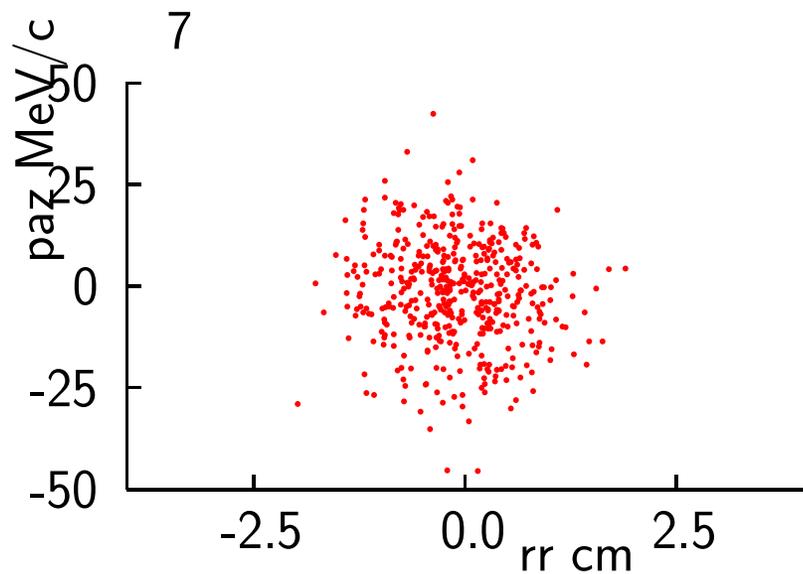
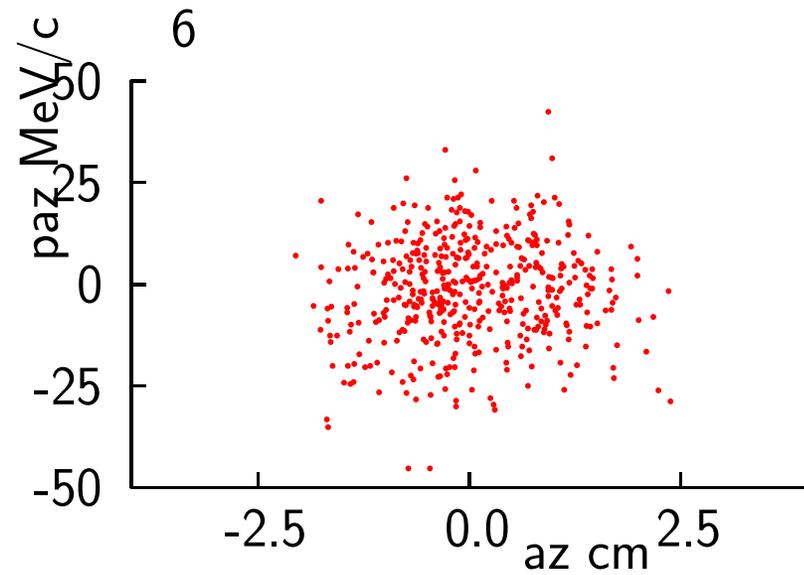
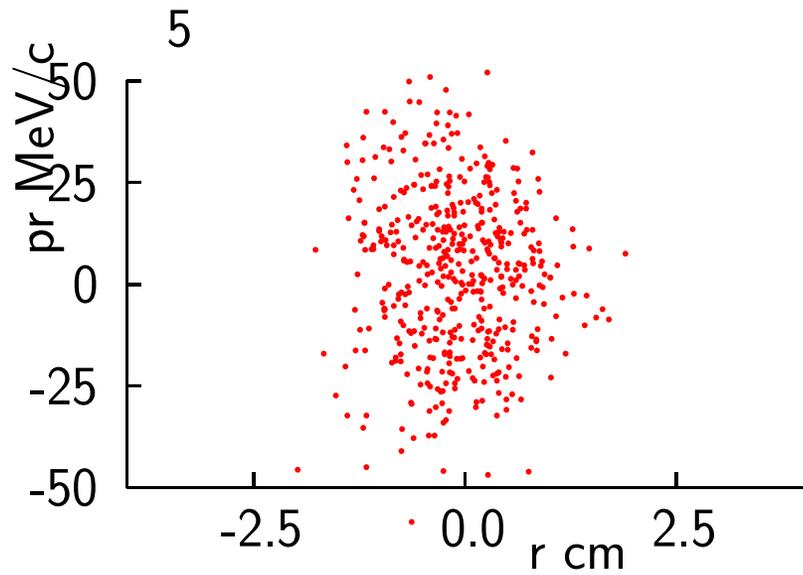
$$R = X - R_o$$

uncorrected

		r	az
emittance	mm	1.139	.967
beta	cm	6.15	14.69

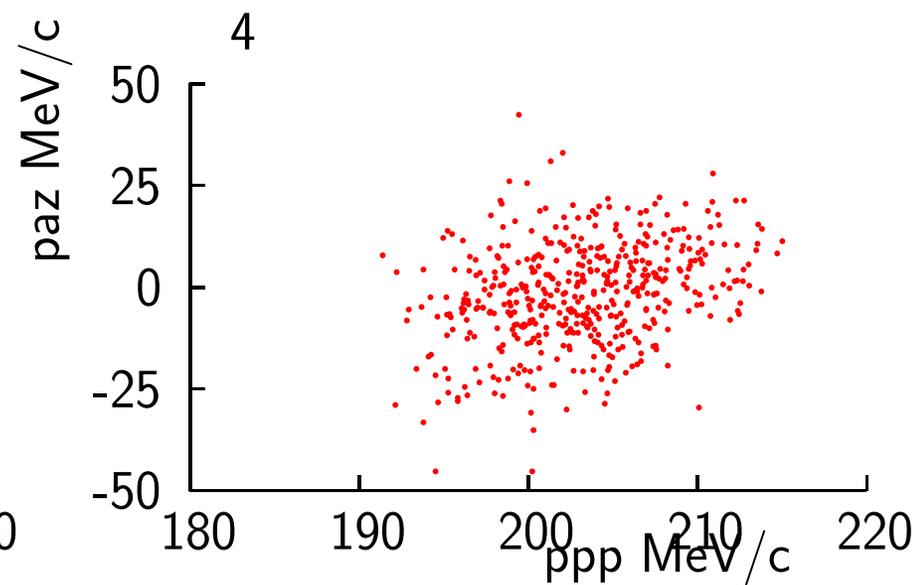
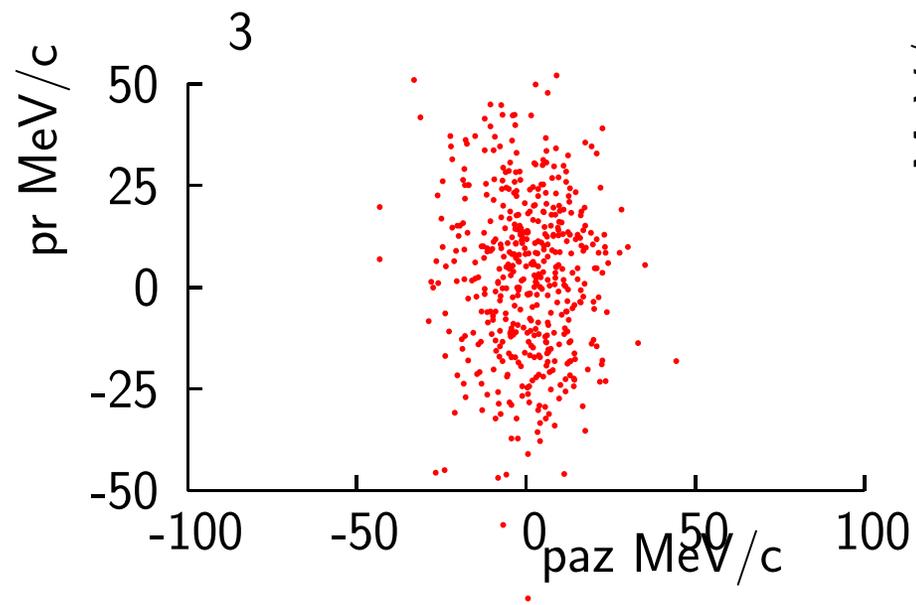
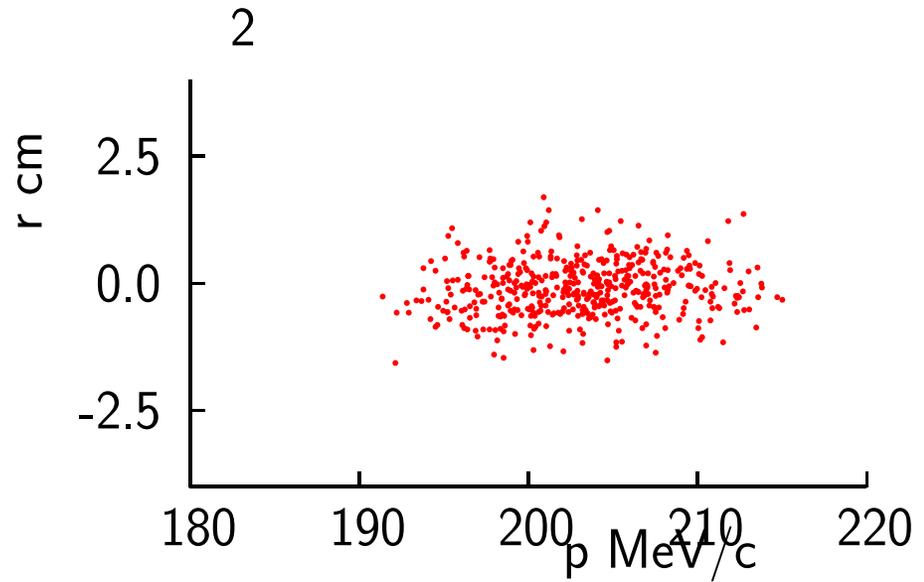
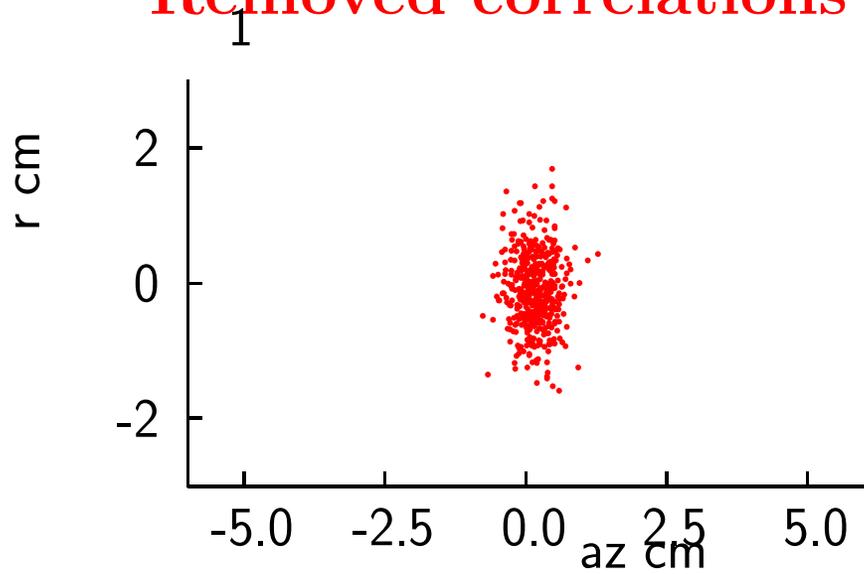


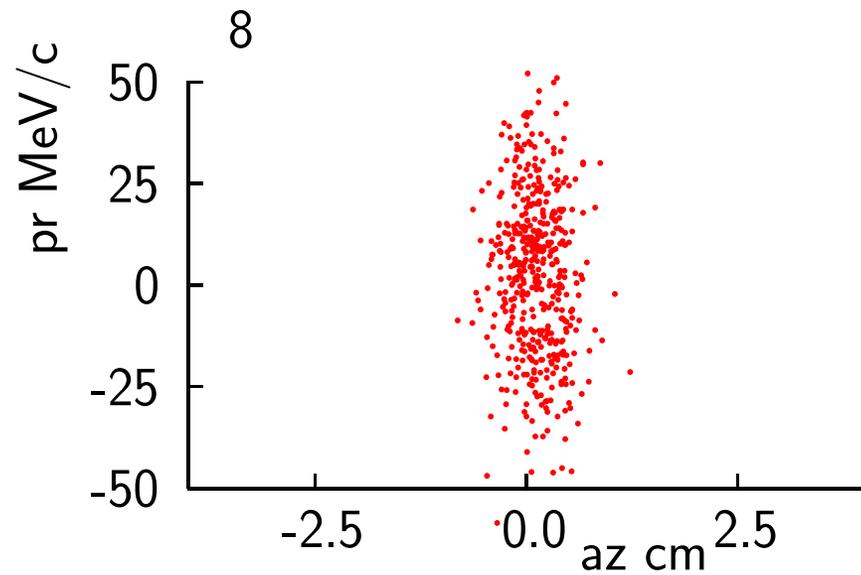
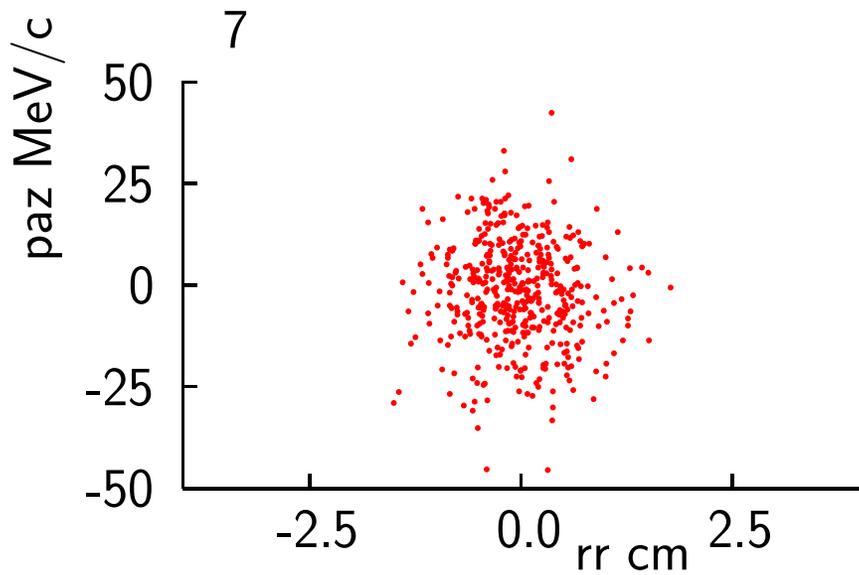
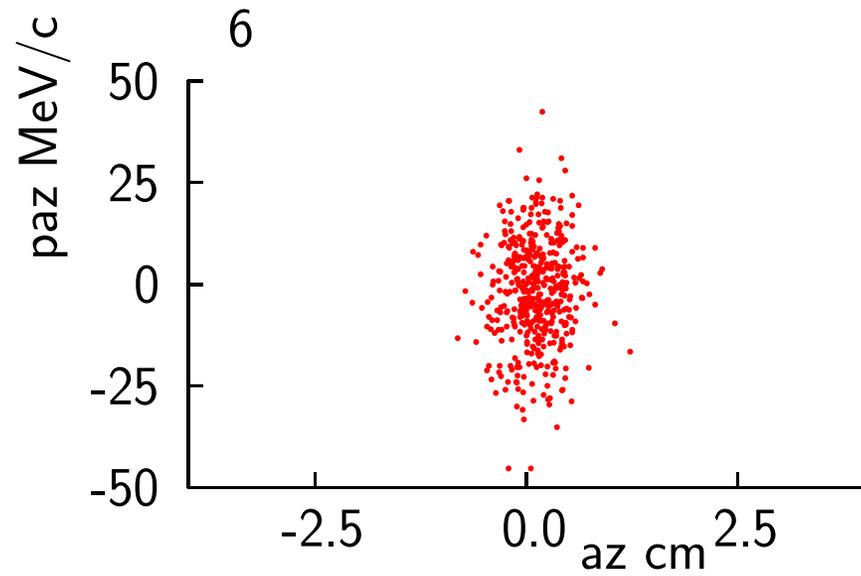
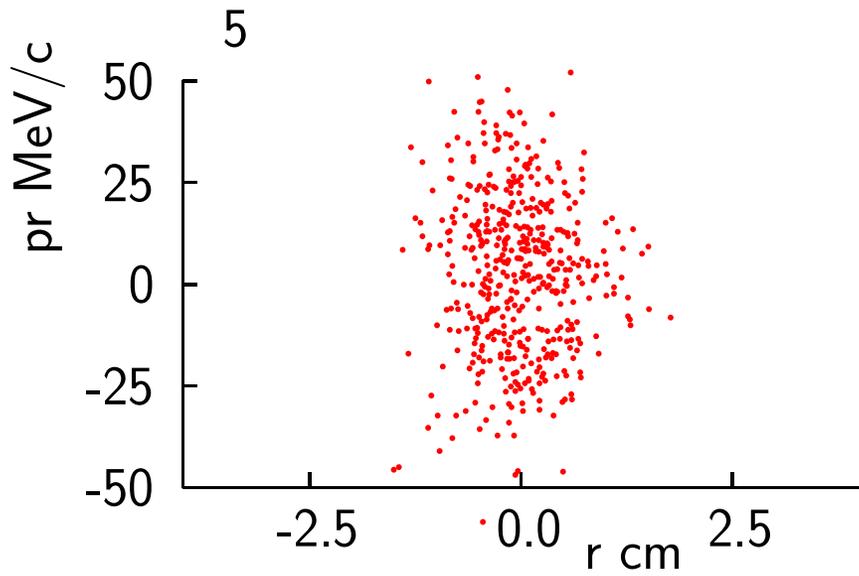




emitr	emitaz (mm)	1.179209	1.01604
betar	betaaz (cm)	6.362249	13.99018

Removed correlations





emitr emitaz (mm) .9487786 .3402649
 betar betaaz (cm) 5.118997 4.685216

uncorrected

		r	az
emittance	mm	1.139	.967
beta	cm	6.15	14.69

corrected

		r	az
sig xy	mm	5.04	2.89
sig p	MeV/c	20.0	12.5
emittance	mm	.95	.34
beta	cm	16.79	15.35

beam mom 202.6 MeV/c helix rad 6.30 cm

Ecalcxy

output from Ecalcxy version 2.05

settings:

sigma cut: 3.000000000000000

do not subtract out amplitude correlation

regn #	Z	Bz	eperp	elong	e6D
2	0.0000E+00	0.0000E+00	0.5928E-03	0.1068E-02	0.2410E-09

0.1563E+01

Ldim	Pzavg	betax	alphax	betay	alphay
0.1435E+00	0.8193E-01	0.1699E+00	0.2835E+00	-0.2260E+00	

n0	n1	n2	Betalong	sigmaE	sigmaT
475	475	475	0.6201E+00	0.4146E-02	0.9147E-10

emitx	emity	sigmaEc	xavg	yavg
0.1006E-02	0.1006E-02	0.4146E-02	0.6176E-01	-0.1680E-02

Dx	Dy	Dr	Dr2
0.1672E+00	0.3657E-01	0.1561E+00	0.1161E+02