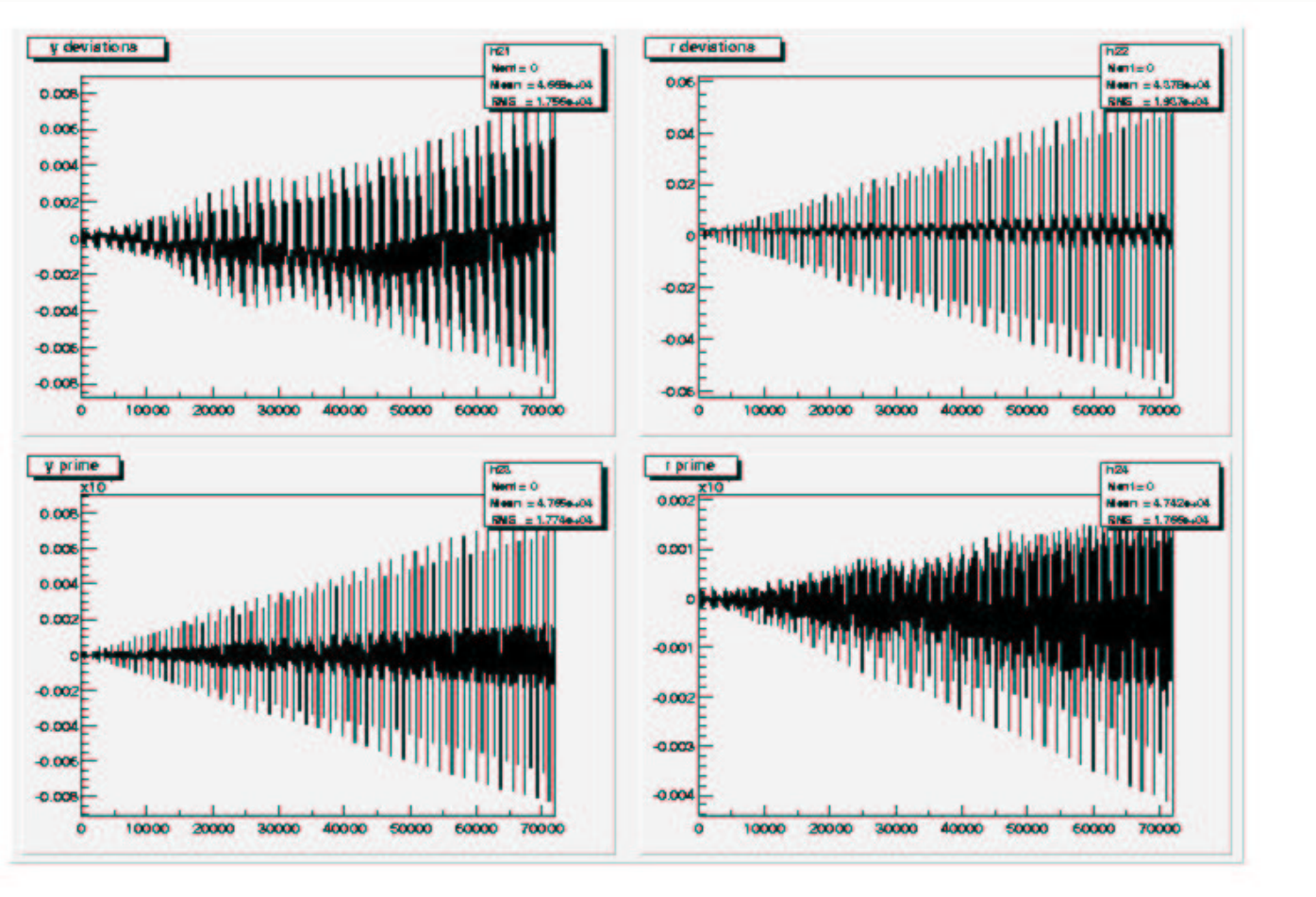
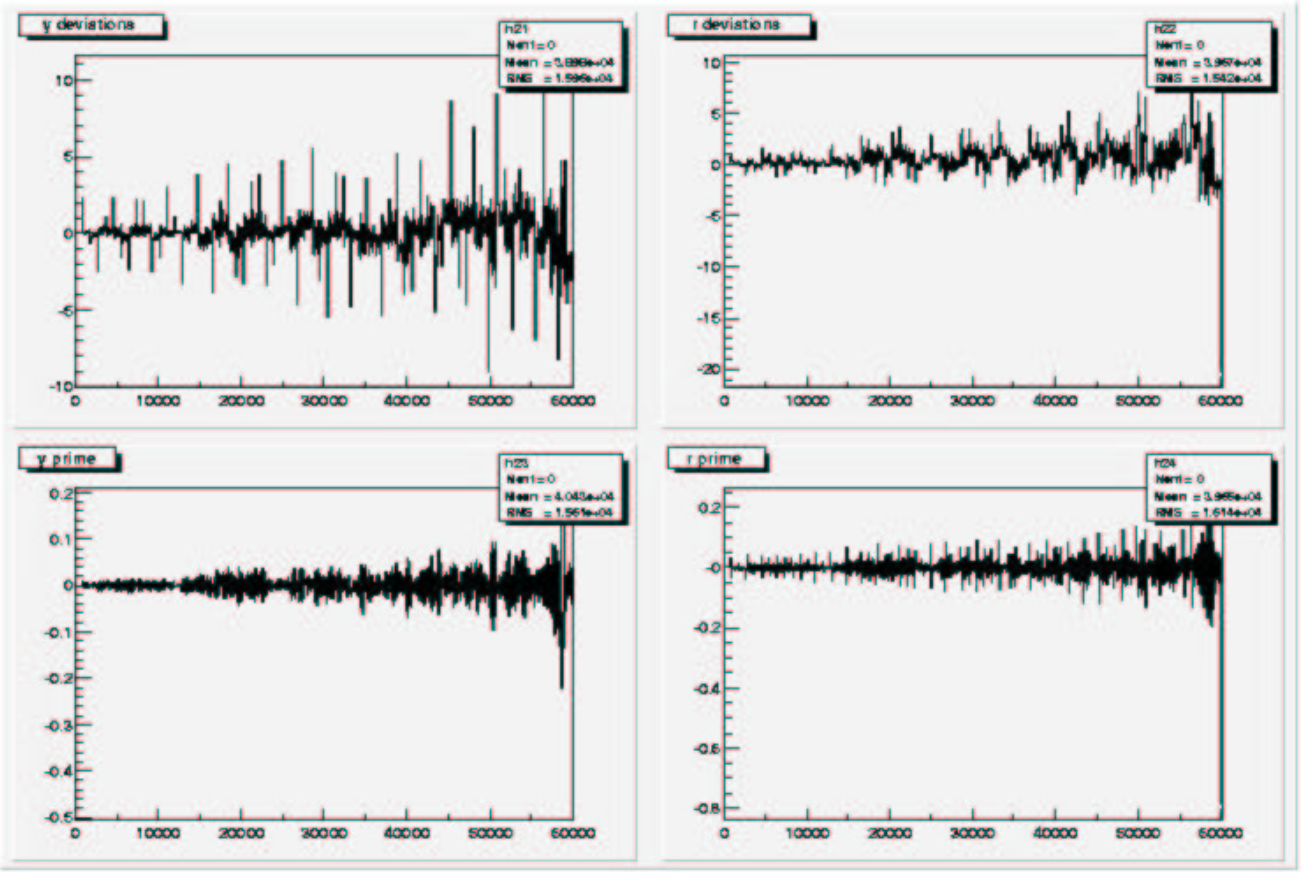
Hardedge Field Model for Tetra Ring

- These slides re-examine the Hard-edge model for the Balbekov Ring in GEANT.
- I have re-examined two cases:
  - The storage ring mode with NO RF and NO material absorbers.
  - The case with RF and LH_2 absorber. Still no wedge absorber and NO RANDOM Processes. dE/dx is taken from a table and is the mean value. (PHYS=0 with LOSS=4 in GEANT)
- The next transparency shows deviations in case 1.
  - σ_y~75 μm and σ_r~400 μm after 20 turns.
  - This is shown to indicate that we really do know the reference orbit.

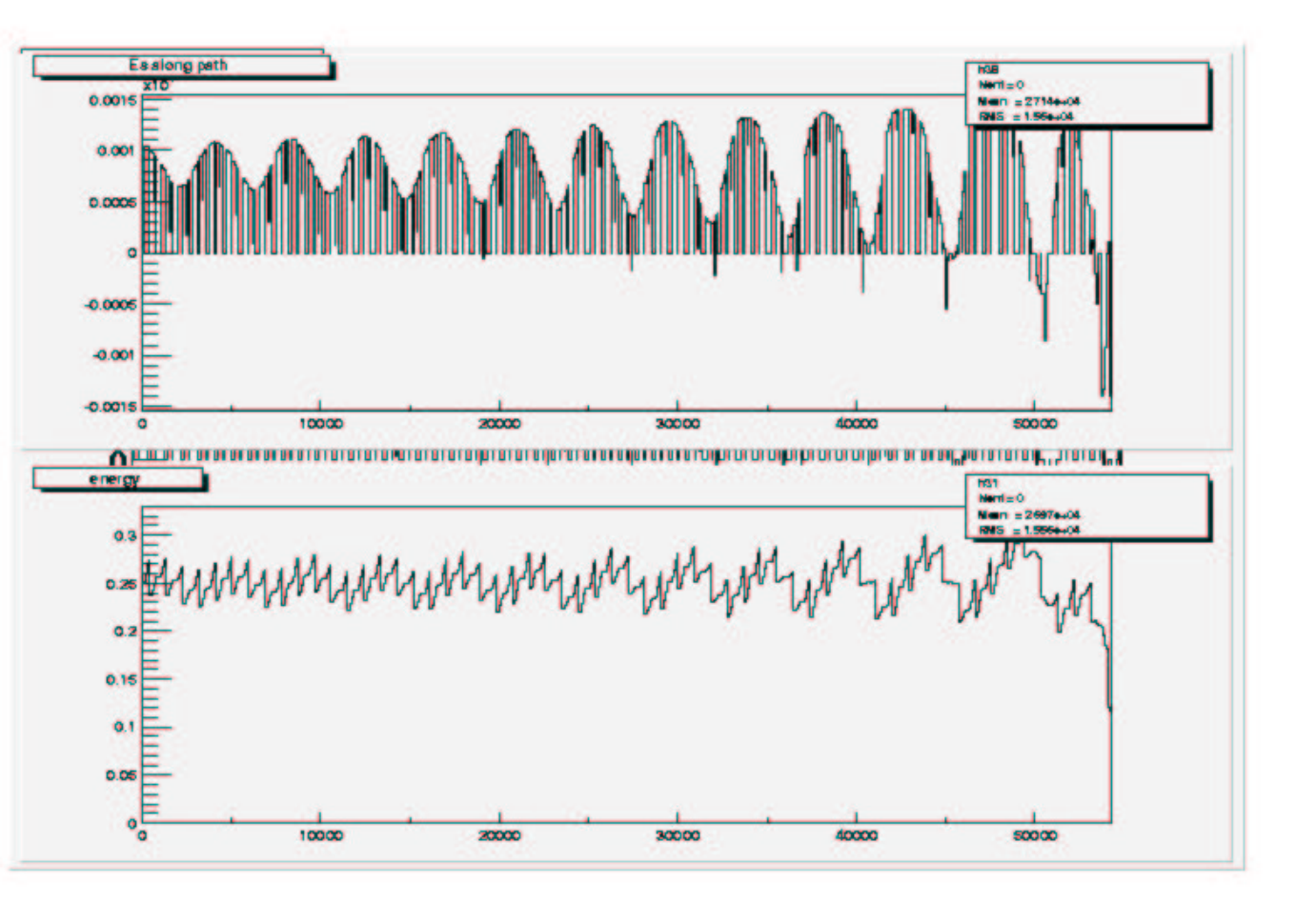
Case 1: Storage Ring Mode
No RF, No Material



Case 2: RF and Material but no Random Processes



Case 2: Correlation of Energy with E field



Following One Turn of the Reference Particle

Pos	quad 1 time	Quad 1 E	Energy	quad 2 time	Quad 2 E	Energy	quad 3 time	Quad 3 E	Energy	quad 4 time	quad 4 E	Energy
	102.0777			0	0.001		34.02591			68.05182		
cav 1	107.401	0.818553	0.243941	5.4936	1.049235	0.251182	39.38335	0.868504	0.25739	73.2677	0.652824	0.253044
cav 2	108.602	0.829685	0.246321	6.6874	1.048835	0.25421	40.57085	0.859725	0.259883	74.45965	0.650038	0.254925
cav 3	109.8005	0.840505	0.248736	7.87768	1.047755	0.257239	41.75615	0.85123	0.262353	75.64965	0.648263	0.256797
cav 4	110.9965	0.850932	0.251182	9.06511	1.04611	0.260263	42.93925	0.843025	0.2648	76.83805	0.647512	0.258671
cav 5	112.19	0.860964	0.253658	10.24985	1.043965	0.263283	44.12035	0.730099	0.267224	78.02465	0.647707	0.260544
cav 6	113.381	0.870657	0.256158	11.43195	1.041355	0.266298	45.29945	0.827558	0.269627	79.20955	0.648756	0.262419
cav 7	114.5695	0.879932	0.258696	12.6116	1.038315	0.269305	46.4767	0.820326	0.272009	80.39285	0.650656	0.264299
cav 8	115.756	0.888786	0.261257	13.78885	1.034875	0.272304	47.6521	0.813461	0.274372	81.57451	0.653305	0.266186
cav 9	122.456	0.94075	0.224755	20.41845	0.995019	0.23676	54.2725	0.750184	0.238254	88.24415	0.664989	0.229232
cav 10	123.682	0.952636	0.227481	21.62885	0.985109	0.239605	55.4804	0.736099	0.24039	89.464	0.669489	0.231152
cav 11	124.9035	0.963406	0.23024	22.8348	0.974965	0.242424	56.6858	0.723167	0.242488	90.6812	0.675063	0.233088
cav 12	126.122	0.523748	0.232215	24.0377	0.512679	0.244397	57.889	0.20678	0.243722	91.89061	0.172826	0.234213
cav 13	127.3375	0.983495	0.234557	25.23855	0.955318	0.246674	59.0911	0.702251	0.245132	93.10975	0.69083	0.235555
cav 14	128.55	0.993486	0.237409	26.43655	0.946707	0.249413	60.2911	0.695301	0.247145	94.32115	0.70175	0.237563
cav 15	129.7585	1.002393	0.240288	27.6317	0.938016	0.25213	61.489	0.689401	0.249141	95.52995	0.713087	0.239605
cav 16	130.9635	1.010325	0.243193	28.82415	0.929309	0.254821	62.6848	0.684535	0.251123	96.7363	0.724783	0.241671

Variations in Timing

	Quad 1	Quad 2	Quad 3	Quad 4	Nominal
cav 1	5.32327	5.4936	5.35744	5.21588	5.407967
cav 2	6.52427	6.6874	6.54494	6.40783	6.601674
cav 3	7.72277	7.87768	7.73024	7.59783	7.792988
cav 4	8.91877	9.06511	8.91334	8.78623	8.981992
cav 5	10.11227	10.24985	10.09444	9.97283	10.16876
cav 6	11.30327	11.43195	11.27354	11.15773	11.35337
cav 7	12.49177	12.6116	12.45079	12.34103	12.53589
cav 8	13.67827	13.78885	13.62619	13.52269	13.71639
cav 9	20.37827	20.41845	20.24659	20.19233	20.37987
cav 10	21.60427	21.62885	21.45449	21.41218	21.59616
cav 11	22.82577	22.8348	22.65989	22.62938	22.80925
cav 12	24.04427	24.0377	23.86309	23.83879	24.01926
cav 13	25.25977	25.23855	25.06519	25.05793	25.22629
cav 14	26.47227	26.43655	26.26519	26.26933	26.43046
cav 15	27.68077	27.6317	27.46309	27.47813	27.63187
cav 16	28.88577	28.82415	28.65889	28.68448	28.83062