

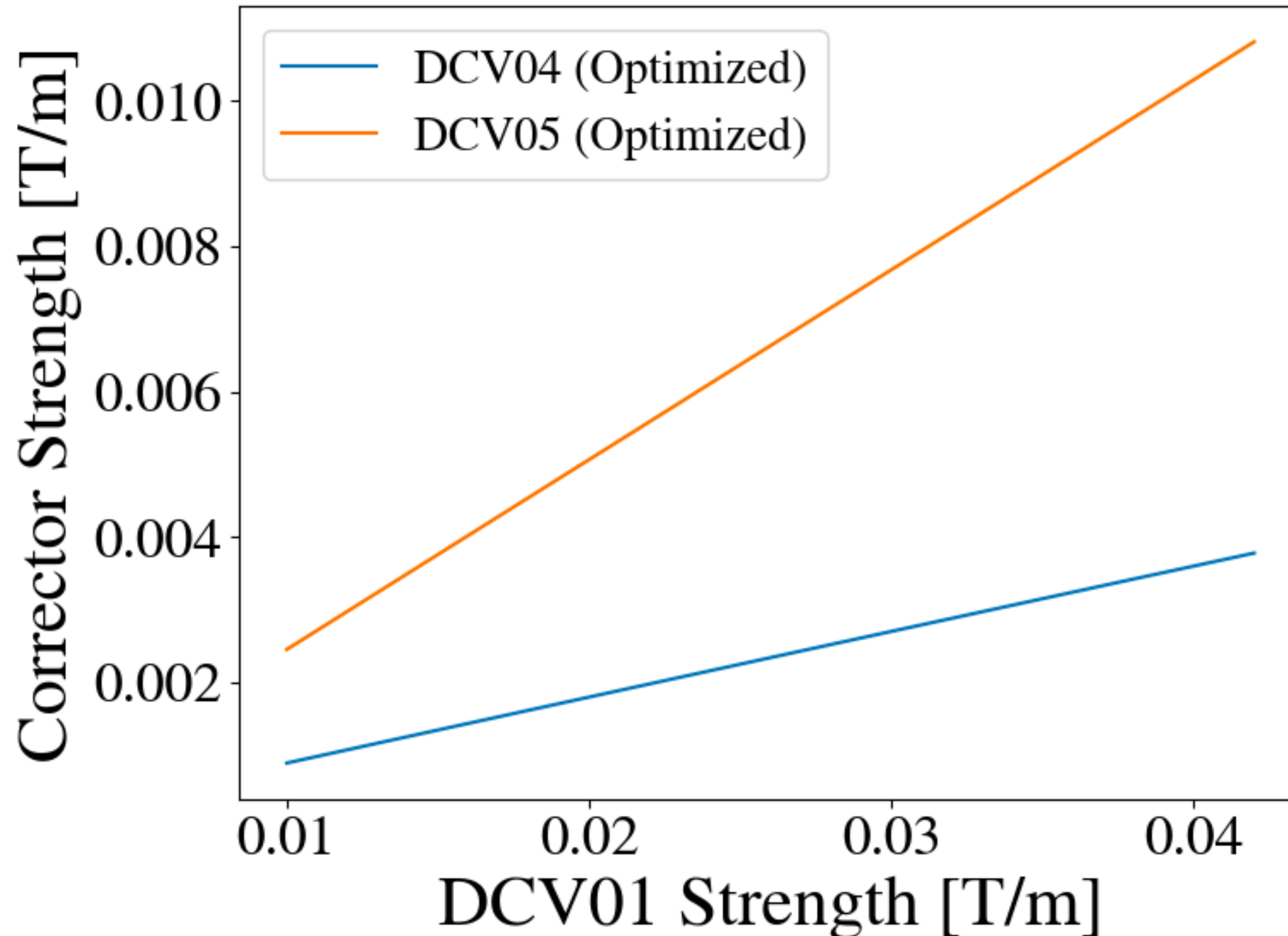
Tuesday's Homework

Control Room Accelerator Physics
USPAS Winter 2024

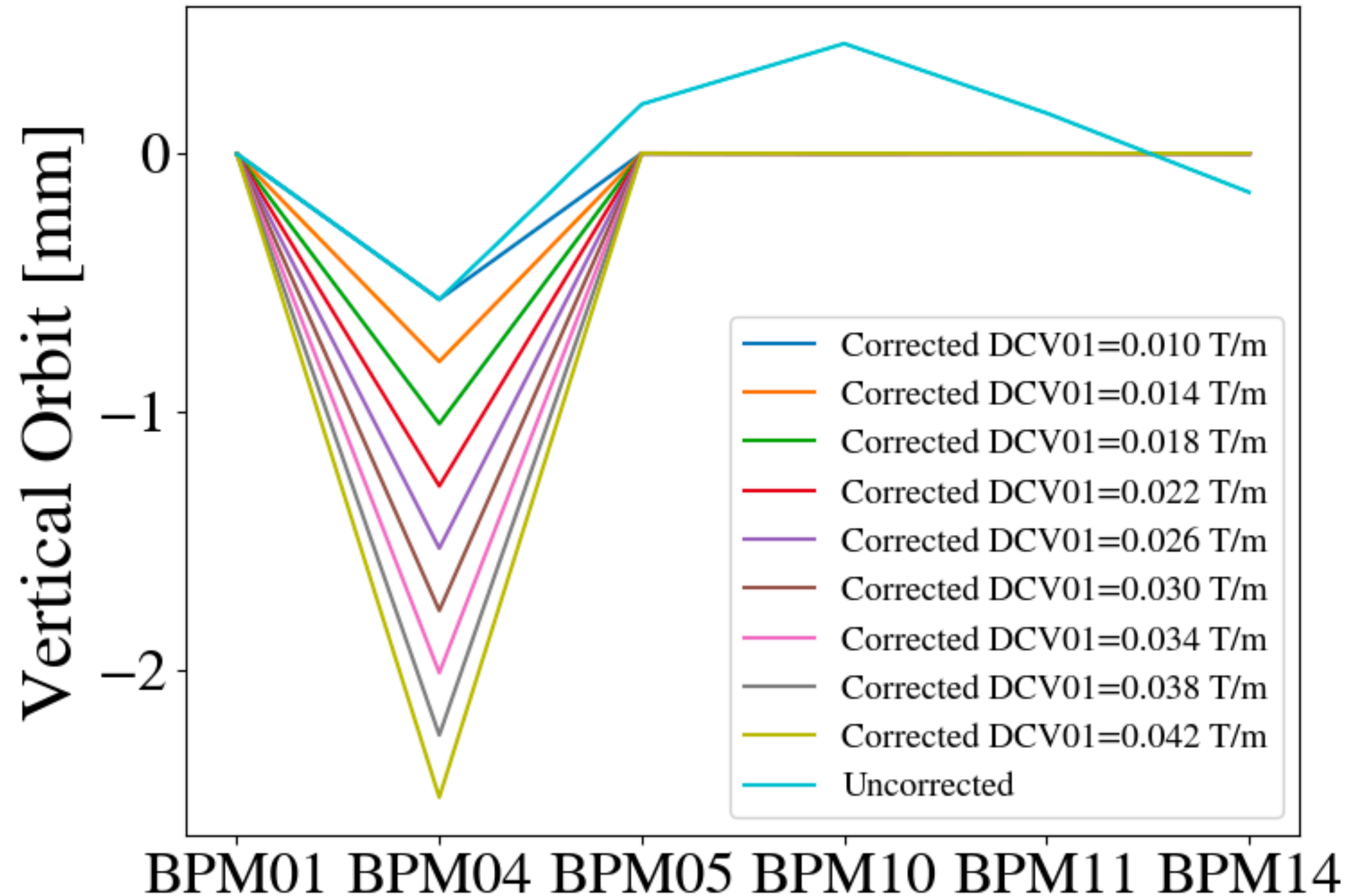
Data from Correctors [T/m] and BPM Orbits [m] with SciPy.minimize() in order to close 3-bump

	DCV01	DCV04	DCV05	rms	BPM01	BPM04	BPM05	BPM10	BPM11	BPM14
0	0.010	0.000892	0.002455	0.000259	-0.002196	-0.566012	0.000052	-0.000547	0.000060	-0.000330
1	0.014	0.001255	0.003500	0.000243	-0.002196	-0.807239	0.000153	-0.000431	-0.000005	-0.000367
2	0.018	0.001618	0.004544	0.000229	-0.002196	-1.048480	0.000181	-0.000279	0.000109	-0.000338
3	0.022	0.001980	0.005588	0.000223	-0.002196	-1.289742	0.000246	-0.000201	0.000066	-0.000344
4	0.026	0.002342	0.006634	0.000199	-0.002196	-1.531028	0.000193	-0.000227	0.000118	-0.000251
5	0.030	0.002703	0.007679	0.000186	-0.002196	-1.772344	0.000185	-0.000281	0.000052	-0.000197
6	0.034	0.003063	0.008724	0.000172	-0.002196	-2.013693	0.000222	-0.000172	0.000097	-0.000175
7	0.038	0.003422	0.009769	0.000156	-0.002196	-2.255081	0.000216	-0.000063	0.000222	-0.000117
8	0.042	0.003781	0.010815	0.000141	-0.002196	-2.496512	0.000183	-0.000286	-0.000005	-0.000047

Optimized Corrector Strengths given different DCV01 Kicks in order to close 3-bump



BPM Orbits with SciPy.minimize()



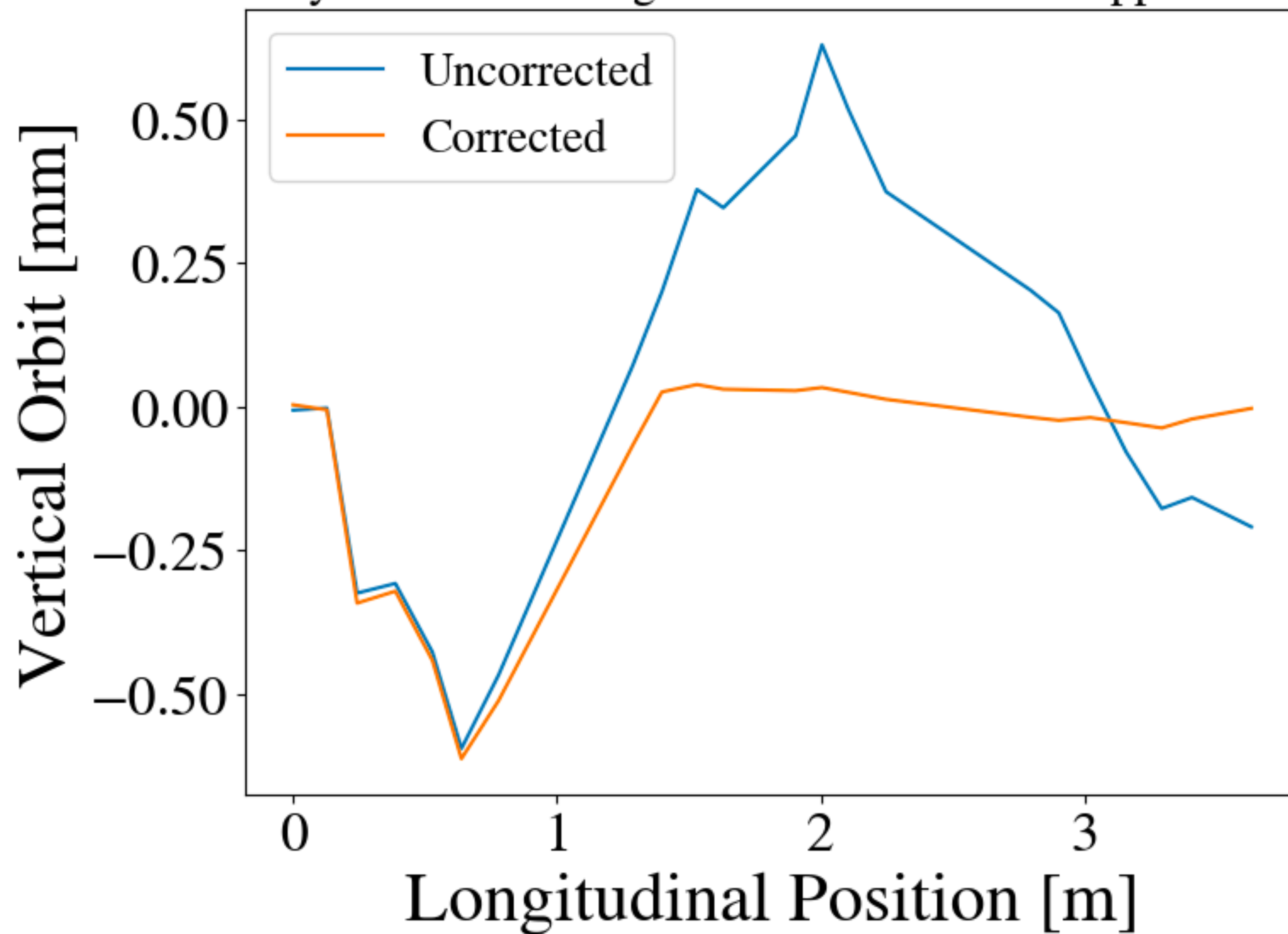
SciPy Minimize Solutions

	DCV01	DCV04	DCV05	rms
0	0.010	0.000892	0.002455	0.000259
1	0.014	0.001255	0.003500	0.000243
2	0.018	0.001618	0.004544	0.000229
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7	0.038	0.003422	0.009769	0.000156
8	0.042	0.003781	0.010815	0.000141

Transfer Matrix Predictions

	DCV01	DCV04	DCV05
0	0.01	0.0009	0.002614

PyORBIT Tracking with Transfer Matrix Approach



Comparison between Transfer Matrix approach and SciPy Optimization

