Analysis of Barnes Hut in OpenMP

Performance of Serial Code vs. Parallel Code on Princeton.edu galactic datasets:

Dataset	Number of Particles	Time (seconds) Serial	Time (seconds) Parallel					
			1	2	4	8	16	32
asteroids1000.txt	1000	0.023097	0.020348	0.021905	0.030464	0.063325	0.121116	0.221256
cluster2582.txt	2582	0.004927	0.005837	0.005042	0.011231	0.008328	0.011733	0.014243
collision1.txt	2000	0.004917	0.004829	0.004447	0.006030	0.005751	0.009468	0.012608
collision2.txt	2002	0.006227	0.006008	0.006098	0.006309	0.006821	0.009951	0.013182
galaxy1.txt	802	0.015414	0.015616	0.015217	0.020928	0.045315	0.072090	0.110689
galaxy2.txt	652	0.012274	0.012615	0.014664	0.023931	0.028826	0.040485	0.072064
galaxy3.txt	2001	0.091639	0.087738	0.094466	0.141264	0.264529	0.488200	0.975077
galaxy4.txt	502	0.012875	0.013325	0.010431	0.012065	0.027304	0.037397	0.051786
galaxy10k.txt	10001	2.325312	2.357691	2.422882	3.557520	6.697054	13.312913	27.061886
galaxy20k.txt	20001	13.663441	15.492622	16.259973	23.813991	45.588013	88.301931	160.741782
galaxy30k.txt	30002	0.032405	0.032411	0.031647	0.057545	0.050811	0.075314	0.171779
galaxyform2500.txt	2500	0.007052	0.005922	0.006162	0.006707	0.008641	0.011501	0.016563
galaxymerge1.txt	2000	0.004920	0.005160	0.004812	0.006784	0.006742	0.008701	0.018789
galaxymerge2.txt	4000	0.011205	0.010364	0.003930	0.012193	0.011976	0.018860	0.024891
galaxymerge3.txt	2901	0.009433	0.009095	0.009045	0.015460	0.011692	0.012852	0.019202
planets.txt	5	0.000070	0.000120	0.000406	0.001250	0.001246	0.001997	0.003918
saturnrings.txt	11987	0.024471	0.024749	0.020095	0.025863	0.032043	0.038763	0.064468
spiralgalaxy.txt	843	0.017879	0.017627	0.023605	0.024740	0.052584	0.091534	0.166260
test1.txt	8	0.000080	0.000119	0.000223	0.000277	0.000661	0.001363	0.002114
test2.txt	5	0.000068	0.000086	0.000284	0.000345	0.000664	0.001655	0.002192

test3.txt	16	0.000090	0.000105	0.000171	0.000438	0.000839	0.001025	0.001941
test4.txt	5	0.000072	0.000106	0.000347	0.004227	0.001024	0.002402	0.008447
test5.txt	6	0.000064	0.000094	0.000052	0.001841	0.000607	0.001359	0.002325