PHYS-8061 HW6 Discussions

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Speed-up of GPU code with global memory
(Each row is different grid size, and each column is different block size)

	16	32	64	128	256	512	1024
64	3.830525						
128	3.940208	4.195863	3.955890	3.954872	3.990551	3.953798	3.952376
256	4.191740	3.953412	3.954855	3.991533	3.954308	3.988888	3.991853
512	3.927130			3.955327	3.957244	3.954973	3.986092

Speed-up of GPU code with shared memory
(Each row is different grid size, and each column is different block size)

	16	32	64	128	256	512	1024
64	5.177437						
128	10.382626	19.192528	35.546150	56.487751	55.168949	55.188854	59.992088
256	18.655134	19.176716	54.582829	57.686165	55.441833	59.921597	62.103104
512	17.906618	32.885067	52.419888	55.147011	59.900826	62.390373	61.733997

Overall, the larger the block size and the grid size are, the higher the speed-up is.
The optimal block size and grid size for gmem is (32, 128), with a speed-up of 4.195863
The optimal block size and grid size for shmem is (512, 512), with a speed-up of 62.390373

Since the seeds are the same for both codes, the resulting histograms should be the same.
Theoretical curve in red, the histogram (from hist_shmem.data, bins=1024) in blue: