

-0.16908926275527011
-0.16905240492390686
-0.169014744045295
-0.16902307738080558
-0.16907985939166542
-0.16908378513403144
-0.16904612370294028
-0.16901416322875557
-0.16902778605967153
-0.16908371256963728
-0.1690807806762737
-0.16904474158016983
-0.1690119640320687
-0.16903317301080506
-0.16908783999484286
-0.16908019793584636
-0.16904027123722698
-0.1690066675984496
-0.16903859940009602
-0.16909278202634503
-0.1690770974161746
-0.16903181574743342
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-0.16904872400310936
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-0.16907120739398612
-0.16902491372614065
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-0.1690615084419054
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-0.16906445026915864
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-0.16900878373309092
-0.16906942996094254
-0.1690936981250963
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-0.16901607122937207
-0.16901202092862838
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-0.16909176966917308
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-0.16902335367423738
-0.16909124149510701
-0.16908618459860106

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-0.1690805511712016
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-0.1690288338562009
-0.16900287426062385
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-0.16909778695827501
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-0.16906372791458818
-0.16901758963659397
-0.16900762655227558
-0.16907413362652354
-0.16909667012761473
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-0.16901176533650814
-0.16901316541886258
-0.16908223578124718
-0.16909188428386437
-0.16904915672896892
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-0.16902057135968881
-0.16908716660199838
-0.16908658831414414
-0.16904412116934067
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-0.16909180276277538
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-0.169094103188884
-0.16907846621173098
-0.16903274720873337
-0.16900284987919809
-0.16904628075107814
-0.16909717678664876
-0.1690729358869143
-0.16902628585292723

34003806 function calls in 41.506 seconds

Ordered by: cumulative time

ncalls	totttime	percall	cumtime	percall	
filename:lineno(function)					
1	0.000	0.000	41.506	41.506	{built-in method
builtins.exec}					
1	0.000	0.000	41.506	41.506	nbody_1.py:3(<module>)
1	0.000	0.000	41.506	41.506	nbody_1.py:142(nbody)
100	39.324	0.393	41.502	0.415	nbody_1.py:73(advance)
20002000	1.318	0.000	1.318	0.000	{method 'append' of
'list' objects}					
14001401	0.861	0.000	0.861	0.000	{method 'keys' of 'dict'
objects}					
200	0.002	0.000	0.002	0.000	nbody_1.py:
105(report_energy)					
100	0.001	0.000	0.001	0.000	{built-in method
builtins.print}					
1	0.000	0.000	0.000	0.000	nbody_1.py:
125(offset_momentum)					
1	0.000	0.000	0.000	0.000	{method 'disable' of
'_lsprof.Profiler' objects}					

-0.16908926275527172
-0.1690524049239141
-0.16901474404530115
-0.16902307738080738
-0.1690798593916716
-0.1690837851340391
-0.1690461237029509
-0.1690141632287673
-0.1690277860596755
-0.16908371256964286
-0.16908078067628346
-0.16904474158017624
-0.16901196403207439
-0.16903317301080864
-0.16908783999484456
-0.16908019793585344
-0.16904027123722912
-0.16900666759845165
-0.1690385994000913
-0.1690927820263521
-0.16907709741618646
-0.1690318157474469
-0.16900365578743826
-0.16904872400310705
-0.16909656666618936

-0.16907120739400114
-0.16902491372614678
-0.1690054028562737
-0.1690615084418881
-0.16909732952330989
-0.16906445026914277
-0.16901977601924423
-0.1690087837330612
-0.16906942996092264
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-0.16905776550855287
-0.16901607122935539
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-0.16909176966916228
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-0.16904838452880422
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-0.16909124149510837
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-0.16902288517135491
-0.1690034111639226
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-0.16906372791458069
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-0.16907413362652127
-0.1690966701276139
-0.16905715253841647

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-0.16901176533650106
-0.16901316541886924
-0.16908223578125162
-0.1690918842838697
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-0.16908716660200046
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-0.16900284987920383
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-0.16902628585294033

```

306005706 function calls in 93.829 seconds

Ordered by: cumulative time

ncalls	totttime	percall	cumtime	percall	
filename:lineno(function)					
1	0.000	0.000	93.829	93.829	{built-in method
builtins.exec}					
1	0.000	0.000	93.829	93.829	nbody_2.py:3(<module>)
1	0.417	0.417	93.829	93.829	nbody_2.py:131(nbody)
2000000	17.063	0.000	93.409	0.000	nbody_2.py:67(advance)
2000000	24.976	0.000	70.116	0.000	nbody_2.py:54(update_vs)
12000000	22.770	0.000	45.140	0.000	nbody_2.py:47(compute_b)
12000000	22.371	0.000	22.371	0.000	nbody_2.py:
51(compute_mag)					
1000000	2.915	0.000	2.915	0.000	nbody_2.py:62(update_rs)
2000200	2.370	0.000	2.370	0.000	nbody_2.py:
44(compute_deltas)					
14001401	0.944	0.000	0.944	0.000	{method 'keys' of 'dict'
objects}					
200	0.002	0.000	0.002	0.000	nbody_2.py:
91(report_energy)					
100	0.001	0.000	0.001	0.000	{built-in method
builtins.print}					
2000	0.000	0.000	0.000	0.000	nbody_2.py:

```
88(compute_energy)
    1      0.000    0.000    0.000    0.000 nbody_2.py:
114(offset_momentum)
    1      0.000    0.000    0.000    0.000 {method 'disable' of
'_lsprof.Profiler' objects}
```

```
-0.1690751638285245
-0.16908926275527172
-0.1690524049239141
-0.16901474404530115
-0.1690230773808056
-0.16907985939166303
-0.16908378513403172
-0.16904612370294583
-0.16901416322875926
-0.16902778605967111
-0.16908371256963875
-0.16908078067628207
-0.1690447415801785
-0.169011964032081
-0.1690331730108106
-0.16908783999484928
-0.1690801979358517
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-0.16900666759845237
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-0.16904872400309243
-0.1690965666661705
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-0.169097329523294
-0.1690644502691274
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-0.16900878373305475
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-0.1690936981250714
-0.1690577655085329
-0.16901607122933907
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-0.16908618459858485
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-0.16909854774651614
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-0.1690288338562002
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-0.16909667012763985
-0.1690571525384384
-0.16901176533652673
-0.1690131654188935
-0.169082235781277
-0.16909188428388705
-0.1690491567289888
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-0.1690829295940737
-0.16903991544263253
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-0.16909410318888737
-0.1690784662117453
-0.16903274720875436
-0.1690028498792201
-0.16904628075109127
-0.16909717678667371
-0.16907293588694394

```

326003906 function calls in 100.551 seconds

Ordered by: cumulative time

ncalls	totttime	percall	cumtime	percall	
filename:lineno(function)					
1	0.000	0.000	100.551	100.551	{built-in method
builtins.exec}					
1	0.000	0.000	100.551	100.551	nbody_3.py:3(<module>)
1	0.479	0.479	100.551	100.551	nbody_3.py:86(nbody)
2000000	20.558	0.000	100.070	0.000	nbody_3.py:28(advance)
2000000	26.382	0.000	71.348	0.000	nbody_3.py:15(update_vs)
12000000	22.716	0.000	44.965	0.000	nbody_3.py:8(compute_b)
12000000	22.249	0.000	22.249	0.000	nbody_3.py:
12(compute_mag)					
1000000	2.960	0.000	2.960	0.000	nbody_3.py:23(update_rs)
20001000	2.484	0.000	2.484	0.000	nbody_3.py:
5(compute_deltas)					
20001000	1.602	0.000	1.602	0.000	{method 'append' of
'list' objects}					
14000701	1.119	0.000	1.119	0.000	{method 'keys' of 'dict'
objects}					
100	0.001	0.000	0.002	0.000	nbody_3.py:
49(report_energy)					
100	0.001	0.000	0.001	0.000	{built-in method
builtins.print}					
1000	0.000	0.000	0.000	0.000	nbody_3.py:
46(compute_energy)					
1	0.000	0.000	0.000	0.000	nbody_3.py:
69(offset_momentum)					
1	0.000	0.000	0.000	0.000	{method 'disable' of
'_lsprof.Profiler' objects}					

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-0.16908926275527172
-0.1690524049239141
-0.16901474404530115
-0.16902307738080738
-0.1690798593916716
-0.1690837851340391
-0.1690461237029509
-0.1690141632287673
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-0.16908019793585344
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-0.16900666759845165
-0.1690385994000913
-0.1690927820263521
-0.16907709741618646
-0.1690318157474469
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-0.16904872400310705
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-0.16906445026914277
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-0.16907499697399825
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-0.16903274720873912
-0.16900284987920383
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-0.1690971767866576
-0.16907293588692712
-0.16902628585294033

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292004308 function calls in 87.677 seconds

Ordered by: cumulative time

	ncalls	totttime	percall	cumtime	percall	
filename:lineno(function)						
builtins.exec}	1	0.000	0.000	87.677	87.677	{built-in method
	1	0.000	0.000	87.677	87.677	nbody_4.py:3(<module>)

1	0.400	0.400	87.677	87.677	nbody_4.py:122(nbody)
2000000	11.538	0.000	87.274	0.000	nbody_4.py:72(advance)
20000000	25.176	0.000	70.547	0.000	nbody_4.py:59(update_vs)
120000000	22.823	0.000	45.371	0.000	nbody_4.py:52(compute_b)
120000000	22.548	0.000	22.548	0.000	nbody_4.py:
56(compute_mag)					
10000000	2.911	0.000	2.911	0.000	nbody_4.py:67(update_rs)
20002000	2.278	0.000	2.278	0.000	nbody_4.py:
49(compute_deltas)					
200	0.001	0.000	0.002	0.000	nbody_4.py:
90(report_energy)					
100	0.001	0.000	0.001	0.000	{built-in method
builtins.print}					
2000	0.000	0.000	0.000	0.000	nbody_4.py:
87(compute_energy)					
1	0.000	0.000	0.000	0.000	<frozen
importlib._bootstrap>:1009(_handle_fromlist)					
1	0.000	0.000	0.000	0.000	{built-in method
builtins.hasattr}					
1	0.000	0.000	0.000	0.000	nbody_4.py:
105(offset_momentum)					
1	0.000	0.000	0.000	0.000	{method 'keys' of 'dict'
objects}					
1	0.000	0.000	0.000	0.000	{method 'disable' of
'_lsprof.Profiler' objects}					

-0.16908926275527172
 -0.1690524049239141
 -0.16901474404530115
 -0.1690230773808056
 -0.16907985939166303
 -0.16908378513403172
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-0.16909667012763985
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-0.16909180276279817
-0.1690829295940737
-0.16903991544263253
-0.1690052254060363
-0.16903656773659193
-0.16909410318888737
-0.1690784662117453
-0.16903274720875436
-0.1690028498792201
-0.16904628075109127
-0.16909717678667371
-0.16907293588694394
-0.1690262858529589

```

4000808 function calls in 19.156 seconds

Ordered by: cumulative time

ncalls	totttime	percall	cumtime	percall	
filename:lineno(function)					
1	0.000	0.000	19.156	19.156	{built-in method
builtins.exec}					
1	0.000	0.000	19.156	19.156	nbody_opt.py:3(<module>)
1	0.000	0.000	19.156	19.156	nbody_opt.py:96(nbody)
100	18.925	0.189	19.154	0.192	nbody_opt.py:32(advance)
4000401	0.229	0.000	0.229	0.000	{method 'keys' of 'dict'
objects}					
200	0.001	0.000	0.001	0.000	nbody_opt.py:
62(report_energy)					
100	0.001	0.000	0.001	0.000	{built-in method
builtins.print}					
1	0.000	0.000	0.000	0.000	<frozen
importlib._bootstrap>:1009(_handle_fromlist)					
1	0.000	0.000	0.000	0.000	nbody_opt.py:
79(offset_momentum)					
1	0.000	0.000	0.000	0.000	{built-in method
builtins.hasattr}					

```
1      0.000    0.000    0.000    0.000 {method 'disable' of
'_lsprof.Profiler' objects}
```