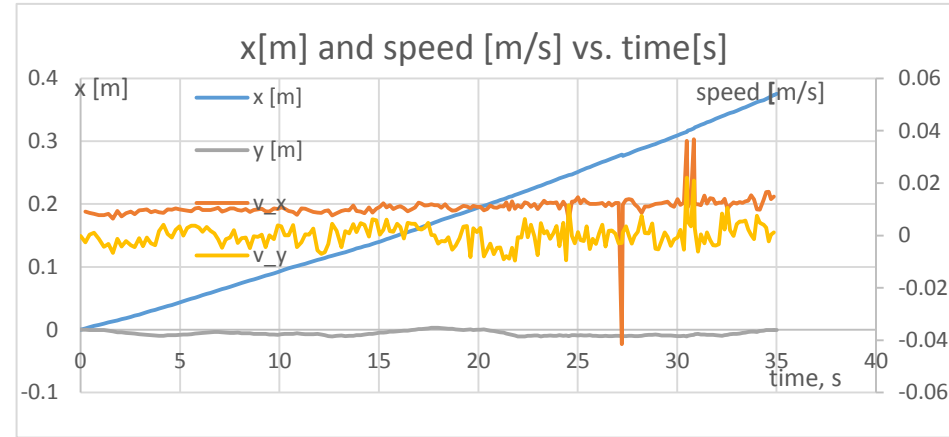


Particle dynamics in tissue

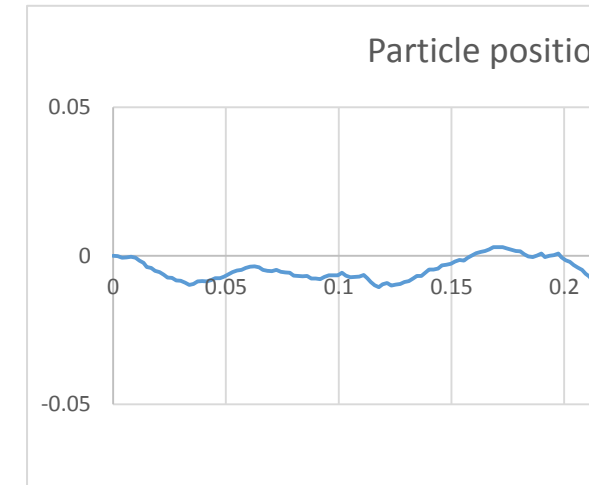
This script simulates a set of static problems. Inertia is ignored

Initial values

Tissue/fluid ratio	1
saline density	1127 kg/m ³
particle diameter	1.5E-08 m
particle density	8900 kg/m ³
Drag coefficient (sphere)	0.47
particle mass	1.57E-20 kg
initTime	0
step length	0.002 m
Number of steps	200



time	Position		Magnetic force [N]		Velocity [m/s]	
	x [m]	y [m]	Fx	Fy	v_x	v_y
0	0	0	3.24E-18	-7.9778E-20	0.00832	-0.0002
0.240308637	0.001999394	-4.92E-05	4.055E-18	-1.1774E-18	0.009122	-0.00265
0.450864411	0.003920074	-0.000607	3.495E-18	1.04139E-19	0.008639	0.000257
0.68226022	0.005919187	-0.000547	3.182E-18	3.88708E-19	0.008215	0.001004
0.923925767	0.007904428	-0.000305	2.897E-18	-4.9376E-19	0.007812	-0.00133
1.176312526	0.009875999	-0.000641	3.193E-18	-1.7739E-18	0.007723	-0.00429
1.402692875	0.011624344	-0.001612	3.404E-18	-1.3195E-18	0.008235	-0.00319
1.62914307	0.013489143	-0.002335	2.797E-18	-2.8755E-18	0.006454	-0.00664
1.845179859	0.014883536	-0.003769	4.11E-18	-5.7818E-19	9.33E-03	-0.00131
2.057471057	0.016864068	-0.004047	2.902E-18	-1.6612E-18	0.007336	-0.0042
2.294080045	0.018599841	-0.005041	3.531E-18	-8.5896E-19	0.008562	-0.00208
2.521053839	0.020543165	-0.005513	4.211E-18	-1.7252E-18	0.009125	-0.00374
2.723877084	0.022393875	-0.006272	3.504E-18	-1.9411E-18	0.008093	-0.00448
2.940062441	0.024143366	-0.007241	4.395E-18	-4.6702E-19	0.009664	-0.00103
3.145860621	0.026132172	-0.007452	4.832E-18	-1.9932E-18	0.00977	-0.00403
3.335105422	0.027981069	-0.008215	4.658E-18	-3.949E-19	0.009958	-0.00084
3.535223151	0.02997392	-0.008384	3.874E-18	-1.3135E-18	0.008854	-0.003
3.749148407	0.031868017	-0.009026	4.396E-18	-1.7658E-18	0.009336	-0.00375
3.947941422	0.033723878	-0.009771	3.731E-18	6.92531E-19	0.008853	0.001643



4.170064371	0.035690284	-0.009406	3.823E-18	1.8144E-18	0.008591	0.004077
4.380392342	0.037497131	-0.008549	4.681E-18	2.74891E-19	0.009992	0.000587
4.580211445	0.039493691	-0.008431	4.534E-18	-3.5071E-19	0.009828	-0.00076
4.783097356	0.041487735	-0.008586	5.079E-18	1.07137E-18	0.010305	0.002174
4.973006236	0.043444672	-0.008173	4.978E-18	1.73318E-18	0.010022	0.00349
5.161465685	0.045333458	-0.007515	4.422E-18	-6.3758E-21	0.00972	-1.4E-05
5.367222006	0.047333456	-0.007518	4.439E-18	1.36108E-18	0.009523	0.00292
5.5680187	0.049245597	-0.006932	4.344E-18	1.75545E-18	0.009277	0.003749
5.767908493	0.051099916	-0.006183	5.268E-18	1.93963E-18	0.010278	0.003784
5.950521196	0.052976749	-0.005492	5.431E-18	1.53922E-18	0.010566	0.002995
6.132629534	0.054900964	-0.004946	4.529E-18	6.63537E-19	0.009785	0.001434
6.334870098	0.056879836	-0.004656	4.655E-18	1.54622E-18	0.009716	0.003227
6.53022344	0.058777885	-0.004026	4.54E-18	8.37845E-19	0.009767	0.001802
6.731587302	0.060744678	-0.003663	4.756E-18	3.84308E-19	0.010064	0.000813
6.929661229	0.062738181	-0.003502	5.241E-18	-7.6366E-19	0.010527	-0.00153
7.117671143	0.064717281	-0.00379	4.34E-18	-2.2715E-18	0.009064	-0.00474
7.313157957	0.066489271	-0.004718	4.352E-18	-6.1618E-19	0.009596	-0.00136
7.519524791	0.068469525	-0.004998	5.026E-18	-3.8341E-19	0.010347	-0.00079
7.712248955	0.07046373	-0.00515	5.054E-18	1.01782E-18	0.010289	0.002072
7.902809604	0.072424364	-0.004755	4.568E-18	-1.375E-18	0.009668	-0.00291
8.100907716	0.074339485	-0.005332	4.189E-18	-4.3489E-19	0.009436	-0.00098
8.31173329	0.076328795	-0.005538	4.838E-18	-3.9279E-19	0.01015	-0.00082
8.508130299	0.078322235	-0.0057	4.299E-18	-2.3343E-18	0.008984	-0.00488
8.703757443	0.080079832	-0.006654	4.377E-18	-1.227E-19	0.009668	-0.00027
8.910535195	0.082079046	-0.00671	4.677E-18	-2.2895E-19	0.009991	-0.00049
9.110482258	0.084076654	-0.006808	4.898E-18	1.63456E-19	0.010228	0.000341
9.305923109	0.086075542	-0.006742	4.474E-18	-2.1333E-18	0.00929	-0.00443
9.500260237	0.087880853	-0.007602	3.93E-18	5.26987E-20	0.009164	0.000123
9.718495991	0.089880673	-0.007575	5E-18	-6.7881E-19	0.010289	-0.0014
9.911105097	0.091862496	-0.007844	5.093E-18	1.94853E-18	0.010082	0.003857
10.09638547	0.09373047	-0.00713	5.771E-18	1.87348E-18	0.01083	0.003516
10.27203501	0.095632751	-0.006512	4.894E-18	6.1037E-20	0.010225	0.000128
10.4676097	0.097632595	-0.006487	4.082E-18	4.43879E-21	0.009339	1.02E-05

10.68177359	0.099632594	-0.006485	4.173E-18	1.8648E-18	0.009023	0.004032
10.8841452	0.101458603	-0.005669	3.37E-18	-1.8707E-18	0.007934	-0.0044
11.10453962	0.103207213	-0.00664	5.128E-18	-1.3166E-18	0.010301	-0.00264
11.29258786	0.105144378	-0.007137	4.891E-18	2.28207E-19	0.010217	0.000477
11.48812378	0.107142204	-0.007044	4.274E-18	1.66009E-19	0.009552	0.000371
11.697338	0.109140697	-0.006967	3.893E-18	1.12524E-18	0.008939	0.002584
11.91227685	0.111062041	-0.006411	4.236E-18	-2.7318E-18	0.008721	-0.00562
12.10499643	0.112742834	-0.007495	4.542E-18	-3.7042E-18	0.008672	-0.00707
12.28371628	0.114292776	-0.008759	4.932E-18	-3.3737E-18	0.009326	-0.00638
12.46071646	0.11594352	-0.009888	4.546E-18	-1.5404E-18	0.009591	-0.00325
12.65820739	0.117837729	-0.01053	3.217E-18	1.88494E-18	0.0077	0.004512
12.88229183	0.119563279	-0.009519	3.44E-18	7.15826E-19	0.008483	0.001765
13.11310634	0.121521342	-0.009112	4.55E-18	-2.176E-18	0.009365	-0.00448
13.30577269	0.123325598	-0.009975	4.454E-18	7.34937E-19	0.00969	0.001599
13.50941034	0.125298917	-0.009649	4.351E-18	3.66328E-19	0.009625	0.00081
13.71647623	0.127291866	-0.009481	6.601E-18	2.48272E-18	0.01149	0.004321
13.87940026	0.129163847	-0.008777	4.189E-18	5.68502E-19	0.009418	0.001278
14.08983047	0.131145682	-0.008508	4.326E-18	2.23398E-18	0.009063	0.00468
14.28591354	0.132922748	-0.007591	3.747E-18	1.83487E-18	0.008479	0.004152
14.49774839	0.134718919	-0.006711	5.318E-18	-1.8185E-19	0.010657	-0.00036
14.68531235	0.13671775	-0.006779	4.359E-18	3.08366E-18	0.00872	0.006169
14.87255998	0.13835049	-0.005624	5.615E-18	3.23375E-18	0.010197	0.005872
15.04253377	0.140083634	-0.004626	5.611E-18	1.37239E-19	0.010947	0.000268
15.22517329	0.142083036	-0.004577	7.151E-18	1.28189E-18	0.012264	0.002198
15.38569418	0.14405166	-0.004224	6.217E-18	3.51611E-18	0.010753	0.006082
15.54759513	0.145792503	-0.00324	6.325E-18	8.85448E-19	0.011568	0.00162
15.7188093	0.147773186	-0.002962	4.84E-18	6.72163E-19	0.010121	0.001406
15.91454647	0.149754172	-0.002687	5.883E-18	2.43735E-18	0.010776	0.004465
16.08600957	0.151601862	-0.001922	6.138E-18	1.77455E-18	0.011224	0.003245
16.25718574	0.15352317	-0.001366	5.208E-18	-5.8492E-19	0.010516	-0.00118
16.44619046	0.155510673	-0.00159	4.516E-18	2.36268E-18	0.009246	0.004838
16.63784861	0.157282771	-0.000662	5.112E-18	2.30986E-18	0.009977	0.004508
16.82053262	0.159105339	0.000161	5.78E-18	2.4214E-18	0.010673	0.004471

16.99336847	0.160950022	0.000934	7.547E-18	1.47828E-18	0.01258	0.002464
17.14939193	0.162912723	0.001318	7.055E-18	1.28338E-18	0.012178	0.002215
17.31097225	0.164880428	0.001676	6.262E-18	1.62645E-18	0.01138	0.002956
17.48107611	0.166816201	0.002179	6.812E-18	2.85969E-18	0.011584	0.004863
17.64026238	0.16866029	0.002953	6.616E-18	1.37504E-19	0.011888	0.000247
17.80845974	0.170659858	0.002995	6.27E-18	4.77723E-21	0.011575	8.82E-06
17.98125081	0.172659858	0.002996	6.443E-18	-1.7479E-18	0.011527	-0.00313
18.14870664	0.174590098	0.002473	5.355E-18	-1.1059E-18	0.010585	-0.00219
18.33374663	0.17654876	0.002068	6.777E-18	-1.3013E-18	0.011925	-0.00229
18.49844849	0.17851288	0.001691	5.145E-18	-3.4003E-19	0.010474	-0.00069
18.68898746	0.180508527	0.001559	4.826E-18	-2.7595E-18	0.009462	-0.00541
18.87248923	0.182244765	0.000567	4.656E-18	-1.8773E-18	0.009606	-0.00387
19.06559297	0.184099677	-0.000181	5.149E-18	-5.0731E-19	0.010464	-0.00103
19.25580318	0.186090041	-0.000377	6.249E-18	1.83196E-18	0.01132	0.003318
19.42535167	0.188009277	0.000185	5.97E-18	1.94585E-18	0.011013	0.003589
19.5980159	0.189910829	0.000805	6.563E-18	-5.179E-18	0.010492	-0.00828
19.74765576	0.191480874	-0.000434	6.156E-18	1.47946E-18	0.011309	0.002718
19.91961071	0.193425505	3.34E-05	5.645E-18	6.48508E-19	0.010946	0.001258
20.10112407	0.195412436	0.000262	5.853E-18	1.5055E-18	0.011005	0.002831
20.27712701	0.197349385	0.00076	5.587E-18	-4.6707E-18	0.00957	-0.008
20.43746464	0.19888381	-0.000523	5.475E-18	-3.0274E-18	0.010118	-0.00559
20.61044666	0.200634073	-0.001491	6.365E-18	-1.6932E-18	0.011464	-0.00305
20.77903982	0.202566856	-0.002005	6.404E-18	-4.2594E-18	0.010674	-0.0071
20.93505411	0.204232157	-0.003112	5.7E-18	-2.5307E-18	0.010551	-0.00468
21.1083081	0.206060102	-0.003924	6.386E-18	-2.6054E-18	0.01124	-0.00459
21.27305874	0.207911913	-0.004679	7.381E-18	-6.0898E-18	0.011029	-0.0091
21.41293082	0.209454602	-0.005952	8.858E-18	-5.483E-18	0.012686	-0.00785
21.54698524	0.211155169	-0.007005	6.139E-18	-5.5076E-18	0.009881	-0.00886
21.6976472	0.212643845	-0.008341	8.365E-18	-3.0207E-18	0.012965	-0.00468
21.84273538	0.21452494	-0.00902	6.758E-18	-6.351E-18	0.010258	-0.00964
21.98481447	0.215982361	-0.01039	6.271E-18	-3.5795E-19	0.011566	-0.00066
22.15745056	0.217979111	-0.010504	5.325E-18	-3.9169E-19	0.010652	-0.00078
22.34469876	0.219973722	-0.01065	8.446E-18	4.2164E-18	0.012707	0.006343

22.48552394	0.221763129	-0.009757	7.012E-18	-3.6944E-19	0.012232	-0.00064
22.64880845	0.223760358	-0.009862	6.035E-18	2.25748E-18	0.010989	0.004111
22.8192675	0.225633574	-0.009161	6.807E-18	-2.648E-19	0.012055	-0.00047
22.98504795	0.227632062	-0.009239	5.936E-18	-4.4356E-18	0.01008	-0.00753
23.14399031	0.229234225	-0.010436	6.831E-18	2.76358E-18	0.011632	0.004706
23.30337606	0.231088264	-0.009686	8.19E-18	5.00913E-19	0.013216	0.000808
23.45442513	0.233084534	-0.009564	7.085E-18	9.34869E-19	0.012251	0.001616
23.61627549	0.235067347	-0.009302	7.37E-18	-7.773E-19	0.012514	-0.00132
23.77521184	0.237056316	-0.009512	7.282E-18	4.4624E-19	0.012462	0.000764
23.93540515	0.239052571	-0.00939	7.761E-18	2.23722E-18	0.012623	0.003639
24.08764688	0.240974321	-0.008836	5.259E-18	-2.0973E-18	0.010217	-0.00407
24.26947878	0.242832061	-0.009577	8.367E-18	3.11909E-18	0.012943	0.004825
24.41427076	0.244706086	-0.008878	7.635E-18	-6.4818E-18	0.011152	-0.00947
24.55099088	0.246230735	-0.010173	3.673E-18	7.00694E-18	0.006037	0.011515
24.70481925	0.247159325	-0.008401	7.779E-18	-1.2988E-19	0.012891	-0.00022
24.85994051	0.249159047	-0.008435	8.085E-18	-1.8939E-18	0.012969	-0.00304
25.01008627	0.251106338	-0.008891	1.008E-17	8.4984E-19	0.014652	0.001235
25.14610358	0.253099272	-0.008723	7.115E-18	-1.0254E-18	0.012266	-0.00177
25.30748408	0.255078818	-0.009008	8.913E-18	-1.4098E-18	0.013715	-0.00217
25.45151924	0.257054258	-0.009321	7.98E-18	2.18165E-18	0.012825	0.003506
25.60194944	0.258983461	-0.008793	7.382E-18	-3.1577E-18	0.012042	-0.00515
25.75464856	0.260822285	-0.00958	6.897E-18	-7.579E-19	0.012103	-0.00133
25.91891059	0.262810317	-0.009798	7.059E-18	-1.9074E-18	0.012067	-0.00326
26.07891354	0.264741082	-0.01032	6.907E-18	4.29736E-19	0.012137	0.000755
26.24338579	0.266737222	-0.010196	7.641E-18	2.505E-18	0.012456	0.004083
26.39596373	0.26863771	-0.009573	6.245E-18	-2.3652E-18	0.011171	-0.00423
26.56339603	0.270508071	-0.010281	7.395E-18	1.04591E-18	0.012508	0.001769
26.72171637	0.272488363	-0.010001	6.138E-18	9.97441E-19	0.011377	0.001849
26.89522909	0.274462465	-0.00968	7.234E-18	4.17489E-19	0.012422	0.000717
27.05595993	0.276459143	-0.009565	7.383E-18	-1.7731E-18	0.012385	-0.00297
27.21298514	0.278403844	-0.010032	-8.07E-17	-5.6095E-18	-0.04147	-0.00288
27.26109245	0.276408658	-0.010171	6.532E-18	6.25898E-19	0.011787	0.001129
27.43000323	0.278399539	-0.00998	8.988E-18	2.2654E-18	0.013646	0.003439

27.57211891	0.280338887	-0.009491	8.988E-18	-2.5818E-20	0.013858	-4E-05
27.71643872	0.282338879	-0.009497	8.91E-18	-2.0714E-18	0.013617	-0.00317
27.85949526	0.284286927	-0.00995	6.648E-18	-1.0607E-19	0.011917	-0.00019
28.02729565	0.286286672	-0.009982	5.571E-18	7.24326E-19	0.010864	0.001413
28.20984621	0.288269978	-0.009724	4.661E-18	4.0184E-18	0.008685	0.007488
28.3842599	0.289784754	-0.008418	5.722E-18	5.05794E-19	0.011035	0.000976
28.56479147	0.291776985	-0.008242	5.8E-18	4.25598E-19	0.011117	0.000816
28.74421507	0.293771622	-0.008095	6.779E-18	2.68179E-18	0.011605	0.004591
28.90446432	0.295631378	-0.00736	7.327E-18	-3.1094E-18	0.012005	-0.00509
29.05782668	0.297472459	-0.008141	7.57E-18	-3.2986E-18	0.012177	-0.00531
29.20839904	0.299305938	-0.00894	7.131E-18	-1.2453E-18	0.012252	-0.00214
29.36920901	0.301276123	-0.009284	7.57E-18	7.32897E-19	0.012689	0.001228
29.52609849	0.303266816	-0.009091	7.853E-18	-3.2845E-19	0.012948	-0.00054
29.68043033	0.305265069	-0.009175	6.647E-18	-2.2933E-18	0.011587	-0.004
29.84360004	0.307155703	-0.009827	5.656E-18	-7.6448E-19	0.010943	-0.00148
30.02471677	0.309137678	-0.010095	9.038E-18	-5.2584E-19	0.013885	-0.00081
30.16851406	0.311134302	-0.010211	6.451E-18	1.18691E-18	0.011643	0.002142
30.33745234	0.313101288	-0.009849	8.034E-18	-3.4394E-18	0.012562	-0.00538
30.48381481	0.314939878	-0.010636	7.14E-17	4.35557E-17	0.036087	0.022015
30.53112676	0.316647248	-0.009595	6.116E-18	2.98738E-18	0.010836	0.005293
30.69697442	0.318444301	-0.008717	9.332E-18	2.35131E-18	0.013905	0.003504
30.83644685	0.320383689	-0.008228	7.294E-17	4.16816E-17	0.036786	0.02102
30.88365191	0.322120183	-0.007236	6.786E-18	1.48112E-18	0.011902	0.002598
31.04782699	0.324074181	-0.00681	7.479E-18	-3.8774E-18	0.011911	-0.00618
31.19689989	0.325849737	-0.00773	6.287E-18	2.5709E-19	0.011585	0.000474
31.36938991	0.327848067	-0.007648	1.11E-17	-2.1853E-18	0.015255	-0.003
31.49802402	0.329810403	-0.008035	7.002E-18	6.45594E-19	0.012206	0.001125
31.66119061	0.331801956	-0.007851	9.579E-18	-1.1939E-18	0.014251	-0.00178
31.8004505	0.3337866	-0.008098	9.55E-18	-2.5163E-18	0.014047	-0.0037
31.93812967	0.335720597	-0.008608	7.159E-18	-2.3006E-18	0.012068	-0.00388
32.09591168	0.337624701	-0.00922	7.545E-18	-1.9983E-18	0.012484	-0.00331
32.25078152	0.339558047	-0.009732	8.787E-18	5.85079E-18	0.012501	0.008324
32.38394753	0.341222795	-0.008623	9.284E-18	1.4736E-18	0.013997	0.002222

32.52506672	0.34319807	-0.00831	7.058E-18	7.25734E-18	0.010254	0.010543
32.66105168	0.344592501	-0.006876	6.191E-18	1.07653E-18	0.011416	0.001985
32.83365118	0.346562936	-0.006534	7.463E-18	-9.9962E-20	0.012628	-0.00017
32.99202101	0.348562757	-0.00656	7.41E-18	2.67621E-18	0.012203	0.004407
33.14616902	0.350443838	-0.005881	8.271E-18	3.42254E-18	0.012778	0.005288
33.29079076	0.352291851	-0.005116	7.797E-18	3.3488E-18	0.012373	0.005314
33.43931903	0.354129536	-0.004327	8.722E-18	3.76572E-18	0.01308	0.005648
33.57969853	0.355965694	-0.003534	8.346E-18	1.44704E-18	0.013255	0.002298
33.72836265	0.357936294	-0.003193	1.096E-17	1.30578E-19	0.015305	0.000182
33.85902794	0.359936152	-0.003169	8.857E-18	-9.12E-19	0.01372	-0.00141
34.00403372	0.361925632	-0.003374	5.803E-18	4.40746E-18	0.009937	0.007547
34.16431646	0.363518331	-0.002164	5.099E-18	2.50563E-18	0.009889	0.004859
34.3458387	0.365313331	-0.001282	9.105E-18	2.76277E-18	0.013644	0.00414
34.48610925	0.367227159	-0.000701	1.302E-17	2.35197E-18	0.016543	0.002989
34.60508148	0.369195283	-0.000345	1.312E-17	-1.7461E-18	0.016672	-0.00222
34.72399652	0.371177812	-0.000609	9.055E-18	2.25663E-19	0.013908	0.000347
34.86775715	0.373177191	-0.000559	1.034E-17	8.48865E-19	0.01484	0.001218
35.00207716	0.375170487	-0.000396				

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