Simulator Results 2

In the last versions of the simulator, we have added 2 options: we can activate collisions among particles; this models the physical particle diffusion in the medium and the possible elastic collisions among particles, and we can add inertia to the particles, maintaining the previous velocity.

Adding collisions:

The result of adding collisions is an increment of the computational cost and a slightly variation of the concentration measured by the receiver. The collisions we consider only affect changing the position of the particles during the time step (if the colloid), but after it Brownian motion is applied again.

The transmitter releases a pulse of amplitude=10000 particles in time =100ns and this is what is received by a receiver 500nm away, in average, both of the same dimensions, Radius =100nm. Total time is 1000ns and time step=2ns.



• Adding Inertia:

Adding inertia has the effect of speed up the signal transmission drastically. In the following graph the inertia factor is incremented from 0 to 0.9 in each row.

The transmitter releases a pulse of amplitude=10000 particles in time =100ns as in the previous example, and this is what is received by a receiver 500nm away, both of the same dimensions, Radius =100nm. Time step =1ns.

200							1					
100	<u> </u> -	1 manual	manna	man	mpon	man	man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mann	man	~	
0 200	0	100	200	300	400	500	600	700	800	900	1000	
100	-	- mar	mound					- I			_	
0	0	100	200	300	400	500	600	700	800	900	1000	
200	-	~~~~	m			1			1		_	
0	ו <u>ו</u>	100	200	300	400	500	600	700	800	900	1000	
200					1		1	1		1		
00	<u> </u>				mp							
200	0 	100	200	300	400	500	600	700	800	900	1000	
100	-	· m	white marked				mont		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and the second	~	
0 200	0	100	200	300	400	500	600	700	800	900	1000	
100	-	Montinen		-	man mar		- marine		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~	
0	0	100	200	300	400	500	600	700	800	900	1000	
100	-	purning	mannon	mantheman	- Marina Marina	man water	when and the	water all managed	munderman	mynum	M.M.	
0	0	100	200	300	400	500	600	700	800	900		
200		~	1	1	1	1	1	1	1	1		
0		400			100			700			<u>~</u>	
100			200	300	400	500	600	700	800	900	1000	
50	-	- Wasserwood	many	unnimmer Vennage	propositione all que de la confictation I	waailanina waxaa	hy Murring warmer	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	an interaction	WWW WWWW	vvv	
100	0	100	200	300	400	500	600	700	800	900	1000	
50		. Another was advinted and a second of the second and the second and the second and the second and the second as										
0		100	200	300	400	500	003	700	800	 ann	1000	
	0	100	200	000	400	000	000	100	000	000	1000	

This figure shows how velocity increases, the values goes from 3.4014m/s to 55,556m/s

