**Function:**

The Matlab script calculates four parameters from single particle trajectory:

* alpha: anomalous exponent
* LC: length of constraint
* kc: effective spring coefficient
* Dc: diffusion coefficient

**Input:**

The script receives as an input an excel file of the format, where (xi, yi) are the trajectory coordinates.

|  |  |  |
| --- | --- | --- |
| t | x | y |
| 1 | 15.2 | 20.5 |
| 2 | 15.6 | 19.5 |
| 3 | 16.1 | 19.6 |
| 4 | 16.2 | 19.6 |
| 5 | 16 | 18.6 |

When the center of mass of the nucleus is measured and the particle position was measure in 3d, the excel sheet has the following structure

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| t | x | y | z | cm x | cm y | cm z |
| 1 | 19.9 | 20.8 | 20.8 | 21.9 | 19.8 | 19.8 |
| 2 | 20.1 | 20.9 | 20.9 | 21.9 | 20 | 20 |
| 3 | 19 | 21 | 21 | 22.1 | 20 | 20 |
| 4 | 18.7 | 21.4 | 21.4 | 22 | 19.9 | 19.9 |
| 5 | 18.8 | 20.9 | 20.9 | 21.9 | 19.8 | 19.8 |

Each excel sheet corresponds to a different measurement.

**Parameter for the analysis**

* dt: the time step in seconds between frames.
* px2mu: pixel to micrometer conversion.
* dim: dimensionality of the trajectory (2 or 3)
* cmflag: center of mass correction. When equal to one, the particle position is corrected by the position of the center of mass of the nucleus: (x,y)corrected=(x-xcm, y-ycm, z-zcm). When equal to zero the trajectory is not corrected.