

STEP 1: Make sure to put all the .txt folder from OT into a folder with all the analysis files

3kin1-3_4	8/11/2018 7:46 PM	Text Document	33,442 KB
calib3-1	8/11/2018 7:46 PM	Text Document	11,352 KB
calibration_only	10/9/2016 4:00 AM	M File	16 KB
excited_power_spectrum_thermal_v4	9/28/2016 9:09 PM	M File	1 KB
excited_power_spectrum_v4	9/28/2016 9:09 PM	M File	1 KB
force_trace_analysis_fiona_v5_new	5/4/2017 4:06 PM	M File	30 KB
medvarfilt1	10/5/2016 11:09 PM	M File	4 KB
power_spectrum	1/23/2009 2:29 PM	M File	1 KB
reanalyze_optical_trap	6/28/2018 7:33 AM	M File	1 KB

STEP 2: Run the force_trace_analysis_fiona_v5_new.m

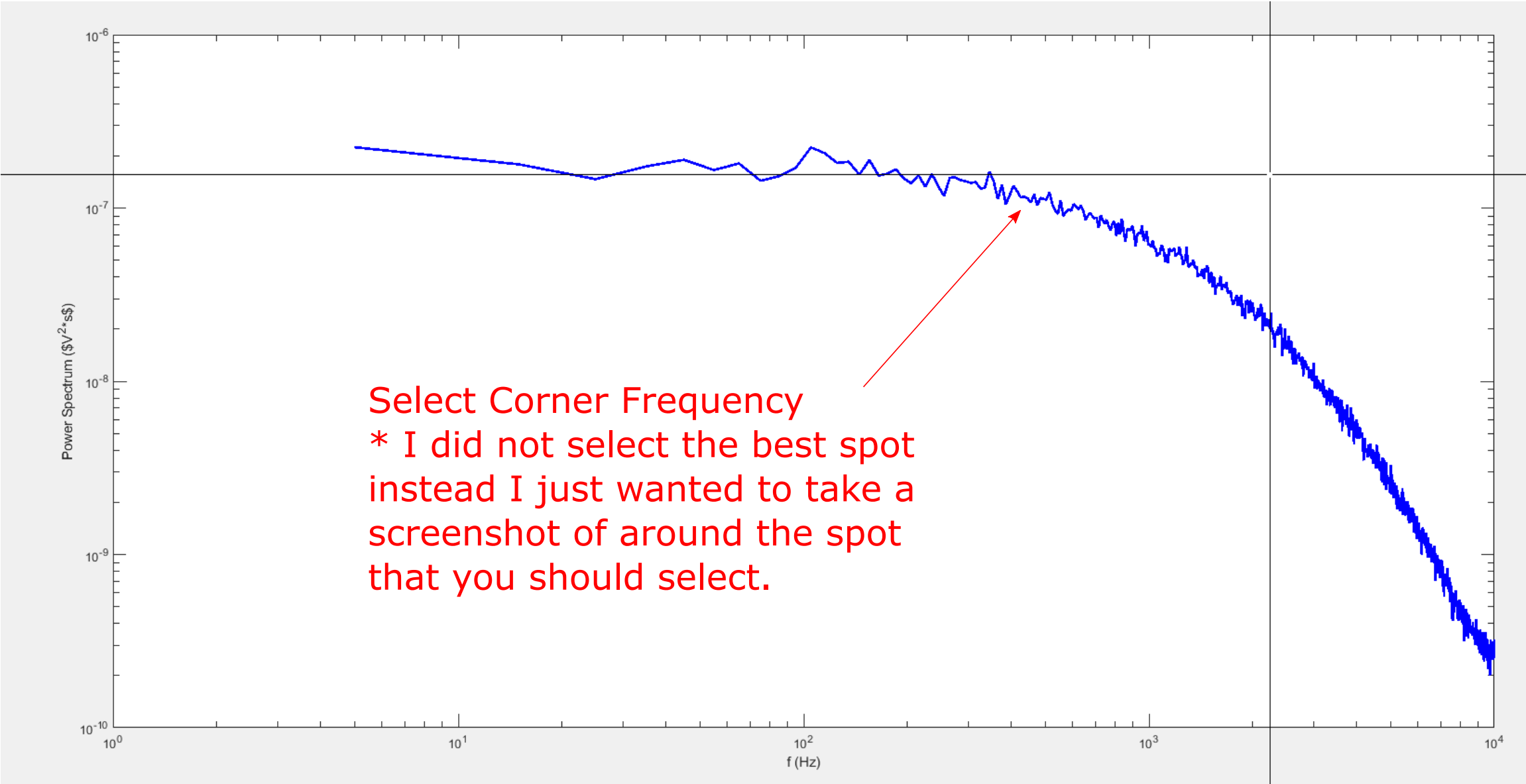
STEP 2a: Select zcont=0 for calibration and 1 for analysis

```
7 -
8 - clear all, close all, clc
9 - addpath('C:\Users\abdullah\Desktop\Codes to upload\Optical Trapping\');
10 - set(0,'DefaultFigureWindowStyle','docked')
11 - % disp('To Do: (1) apply std. dev. and other criteria - see Matt Lang paper (2) peak finder')
12 -
13 - % options %%%%%%%%%%%%%%%%%%%%%%%%%
14 - zcont=0; %0-calibration, 1-stall force, 2-force feedback
```

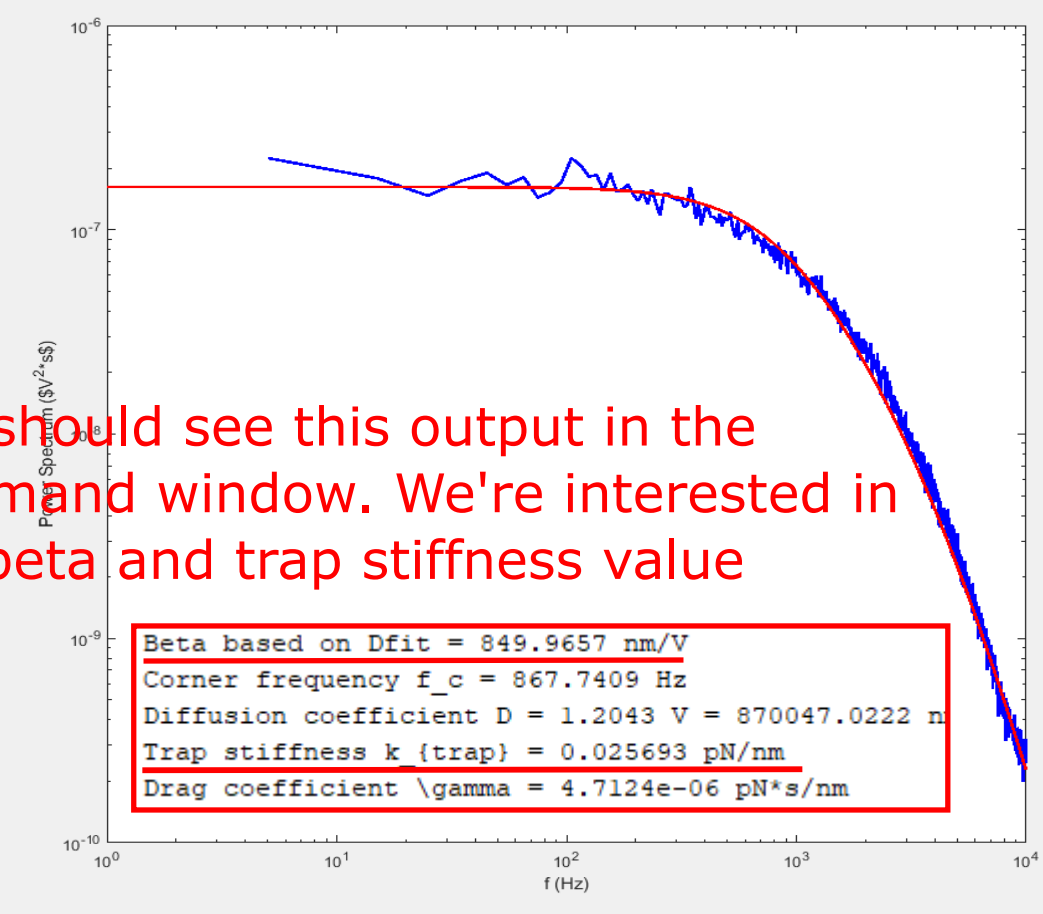
STEP 2b: (1) Select zcont=0 for calibration and 1 for analysis

```
114 - addpath('C:\Users\abdullah\Desktop\Codes to upload\Optical Trapping\');
115 - datdir='C:\Users\abdullah\Desktop\Codes to upload\Optical Trapping\';
116 - %cd('C:\Users\abdul\Desktop\All the data - LBC\optical trap data\160928-abdullah\test\');
117 - calib_fname='calib3-1.txt';
118 - force_fname='3kin1-3_4.txt';
119 - %MT=xlsread('MT1.xlsx');
```

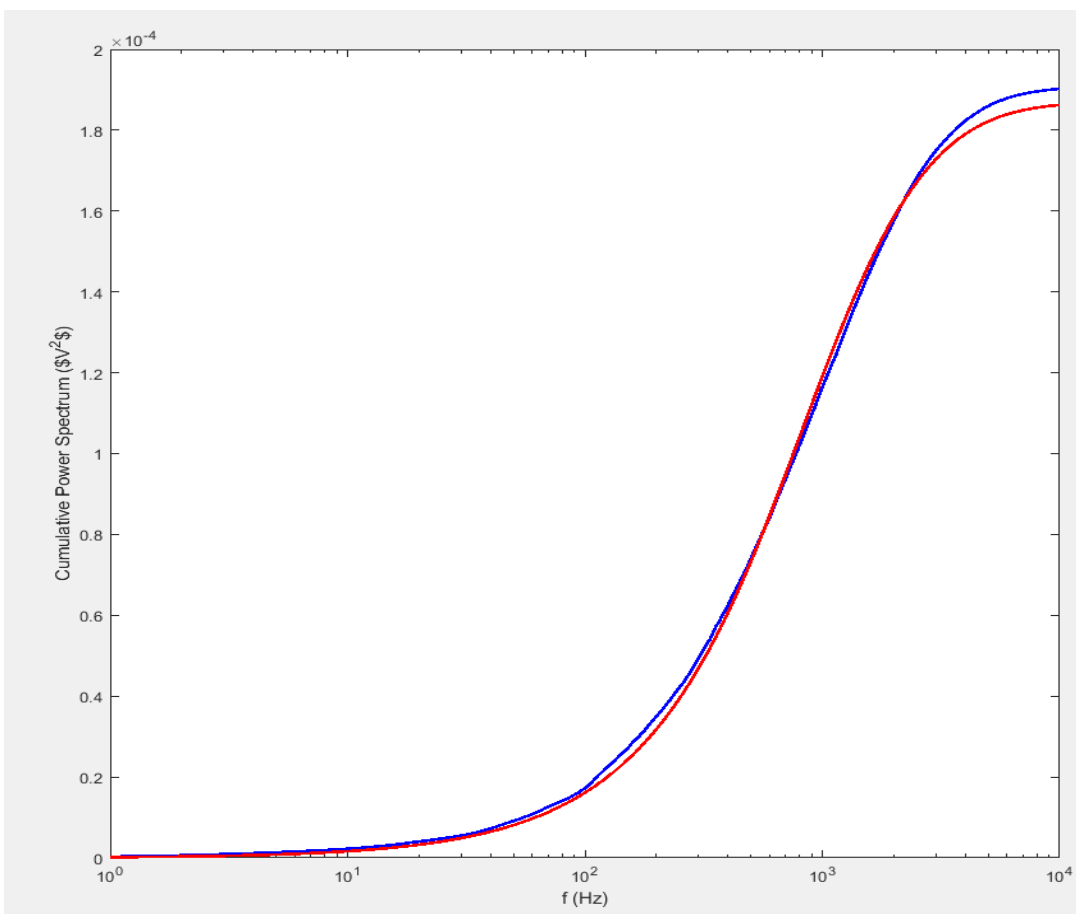
STEP 3: Run Calibration



Output (make sure to calibrate close to the coverslip) for best fit



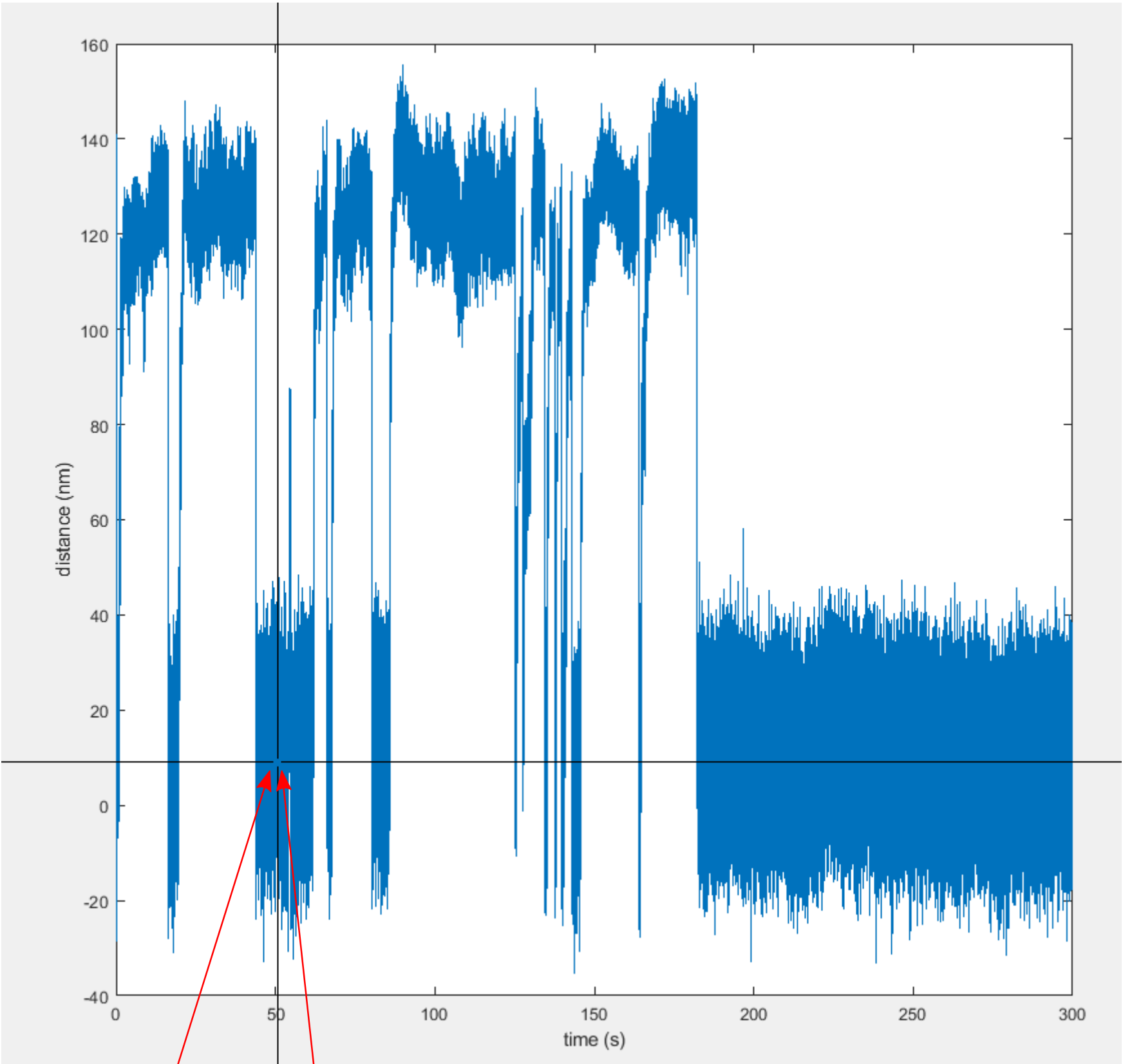
You should see this output in the command window. We're interested in the beta and trap stiffness value



STEP 4: Run the force (.txt) data. First update the beta (PD_sens) and trap stiffness (k_trap) from step 3. Change zcont=0 to zcont = 1. Also change zdim. This is the dimension of MT. In this case forces are mostly in y-dimension so I changed it to y.

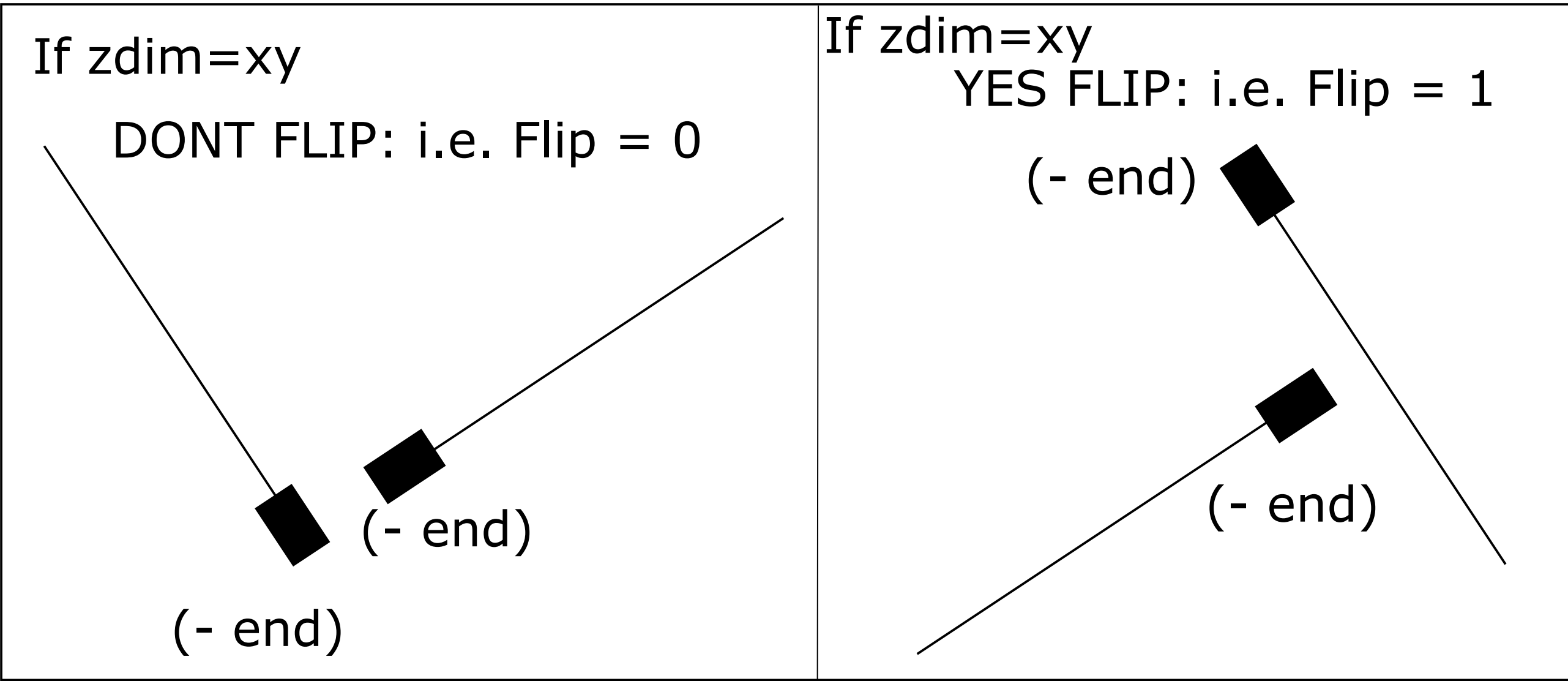
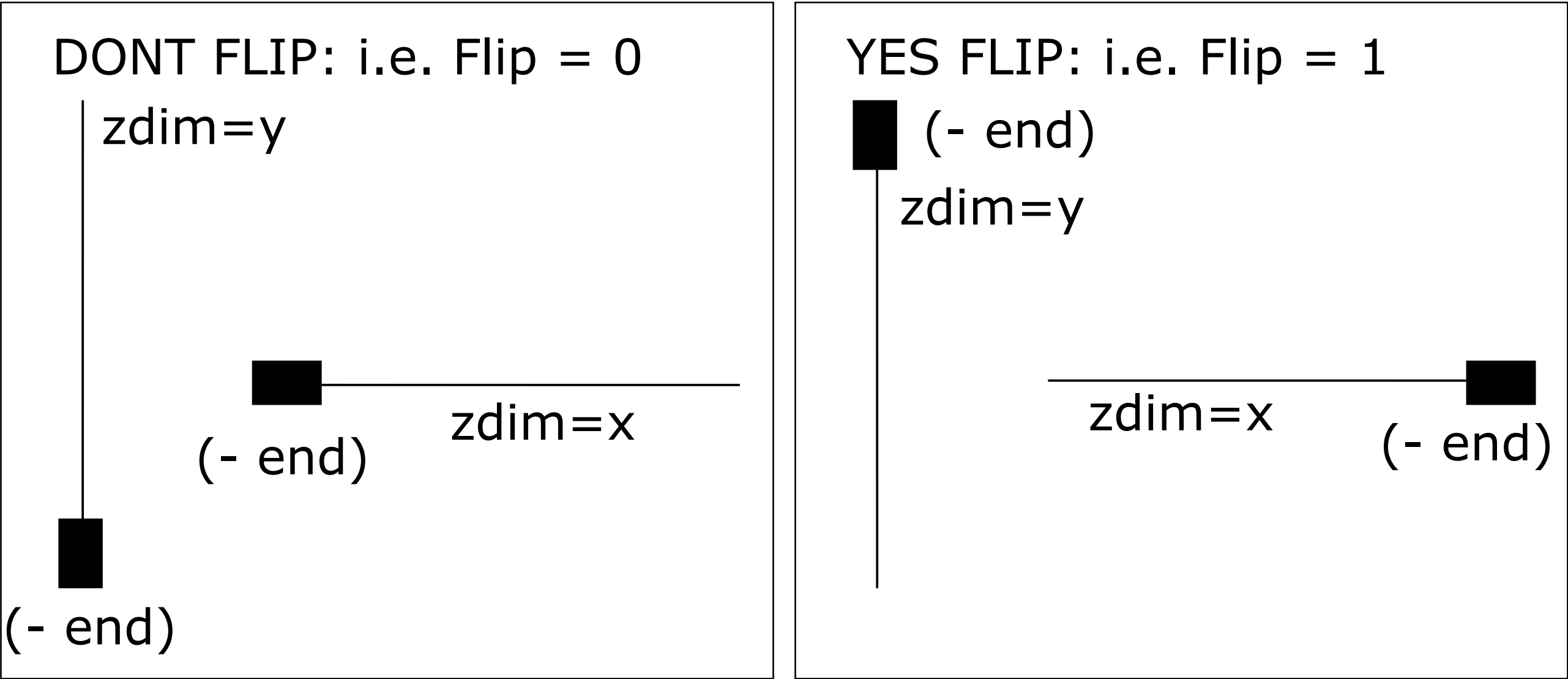
```
143 - PD_sensitivity = 849.9657; %mean(cal02-2,4): sma01-6:14
144 - k_trap = 0.025;

125 - zdim='y';
```

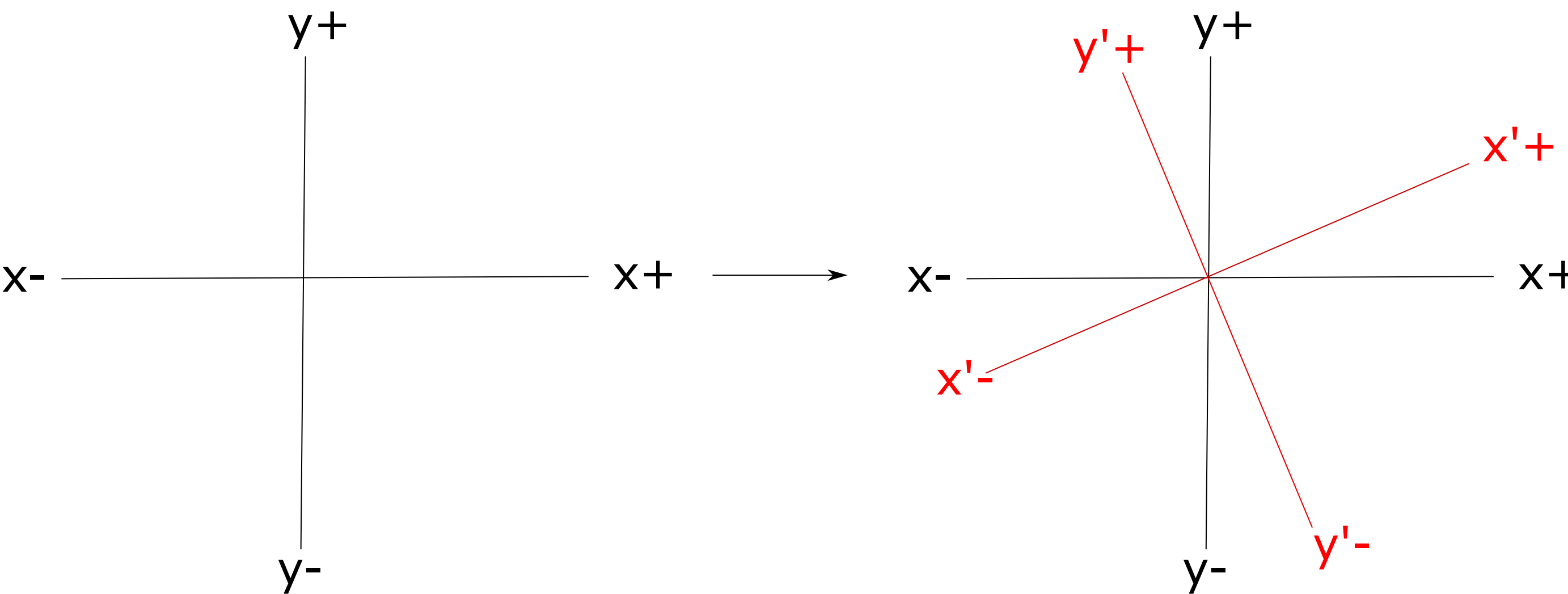


Selection 1 Selection 2

STEP 5: It will ask you to flip plot? In this case, this is single kin-1 so you don't have to. But in the case of LBCs. flip based on the MT orientation. My general rule is as follows:



This is because we transform the coordinates counter clockwise:



STEP 6: You will generate a final file (.mat). This will be the input file for "final_opt_res_5_input_ktrap.m"