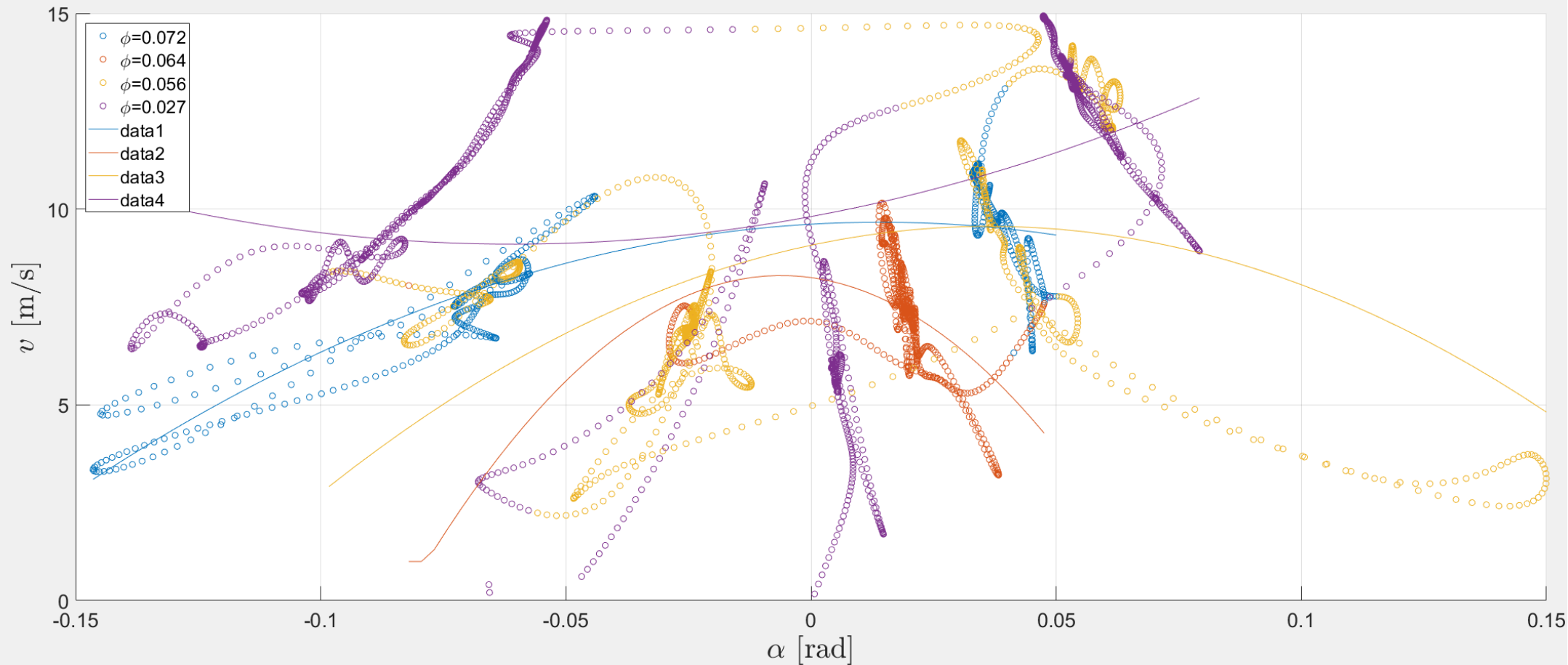
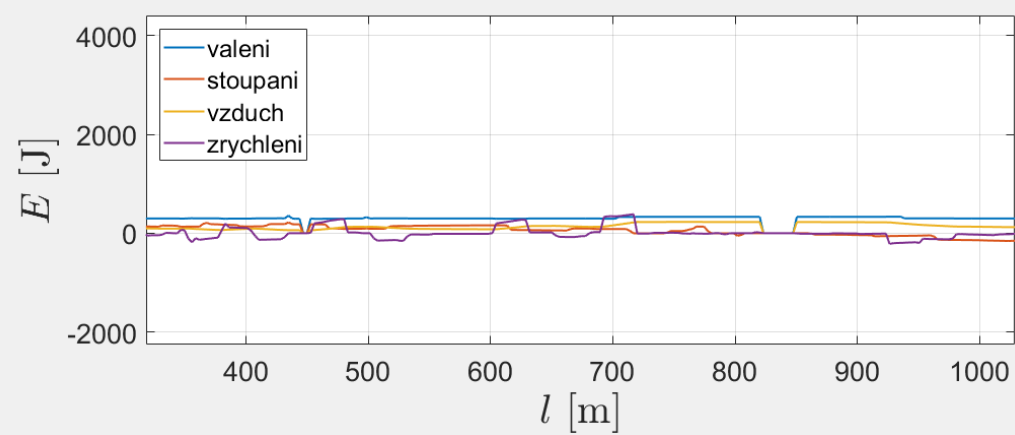
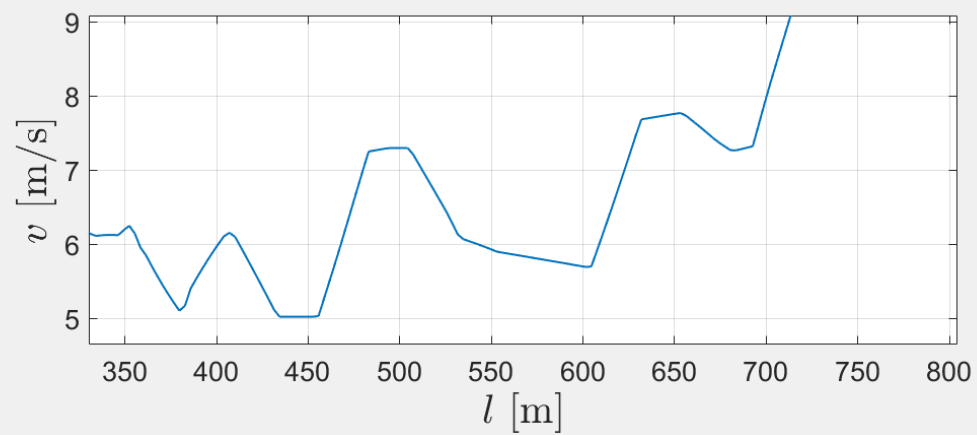
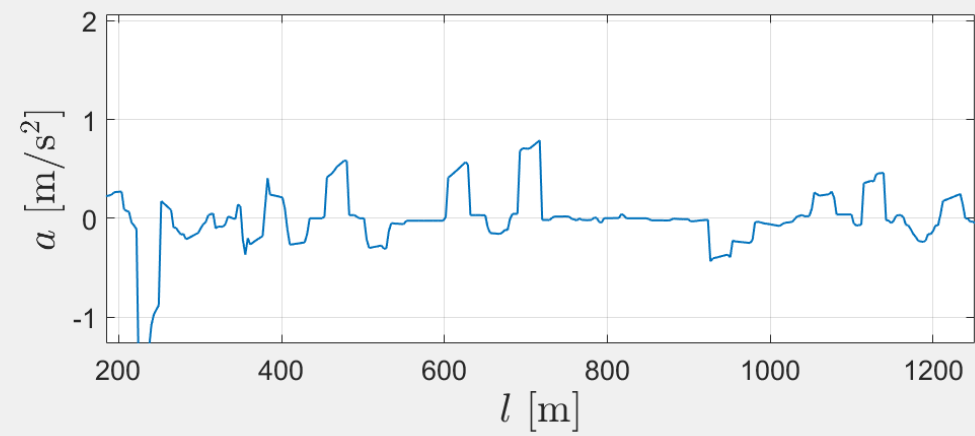
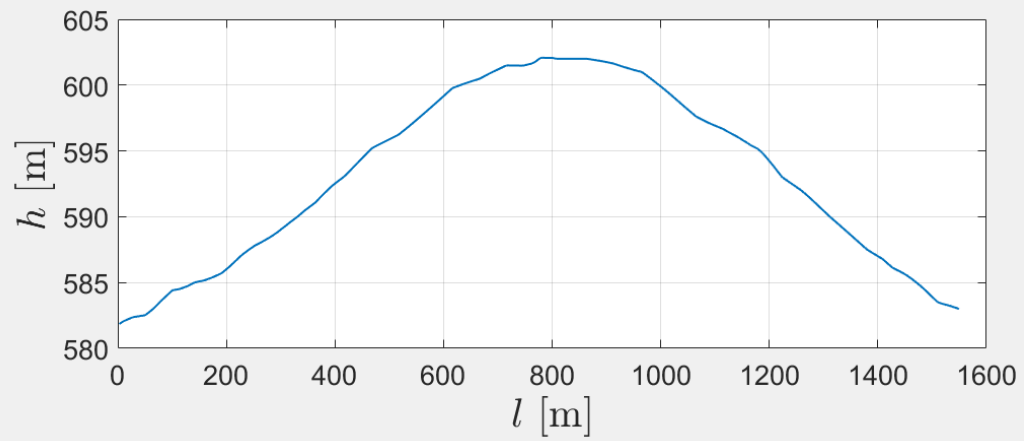
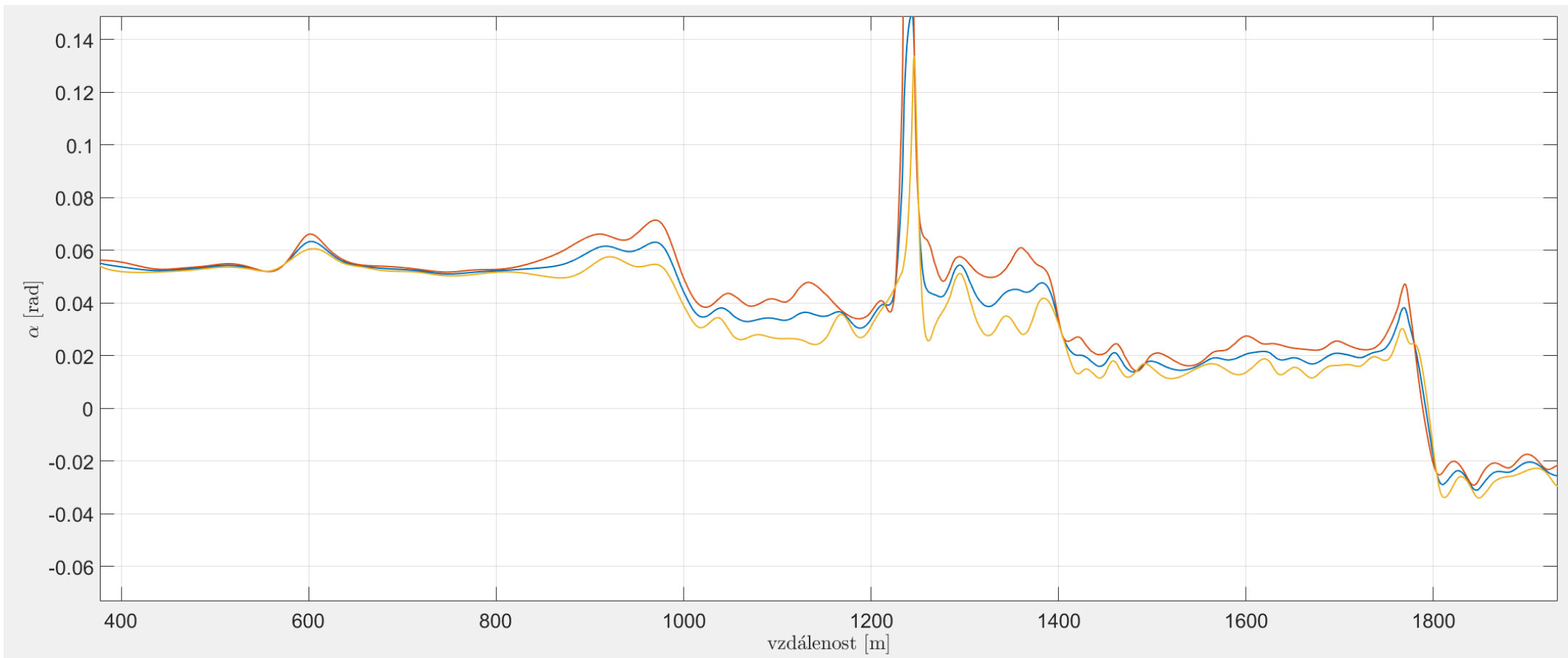
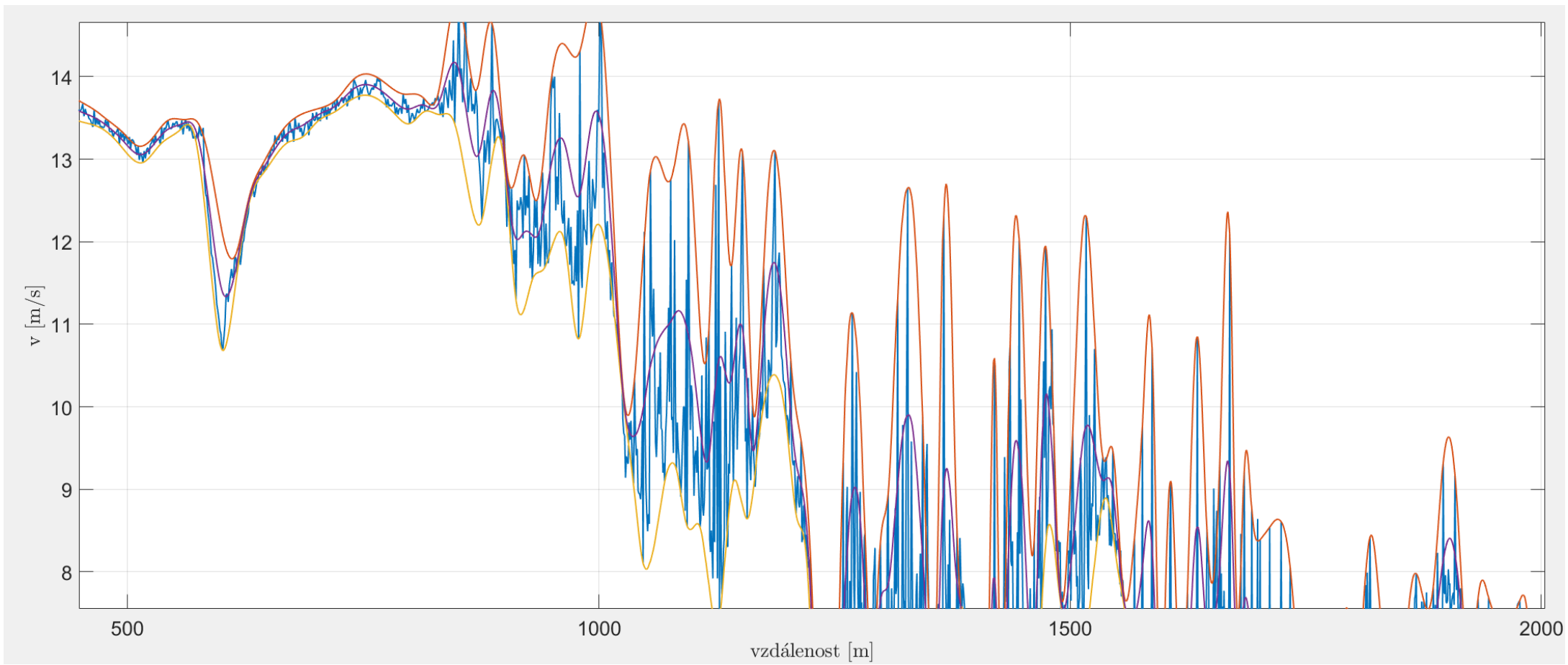


PŘÍLOHY









```

function data = T_analyzeTrack(data)

changes = 0;
if ~isfield(data, 'angle')
    changes = 1;
    if length(data.delta_dist)==1
        data.delta_dist = data.delta_dist(ones(data.npoints-1,1));
    end
    data.delta_length = sqrt(data.delta_dist.^2+(data.elevations(2:end)-data.elevations(1:end-1)).^2);
    data.c = data.delta_dist./sqrt(data.delta_dist.^2+(data.elevations(2:end)-data.elevations(1:end-1)).^2);
    data.s = (data.elevations(2:end)-data.elevations(1:end-1))./sqrt(data.delta_dist.^2+(data.elevations(2:end)-data.elevations(1:end-1)).^2);

    data.angle = asin(data.s);
    % k = data.s.^2+data.c.^2
    data.length = sum(data.delta_dist);
    if changes
        movefile([fullfile(cd, 'input', data.name), '.mat'], NameSequence(data.name, 'input', [], '.mat', []))
        save(fullfile(cd, 'input', data.name), 'data');
        % save(fullfile(cd, 'input', data.name), '-struct', 'data');
        % save(fullfile(cd, 'input', MESH.MeshName), '-struct', 'MESH');
        disp('Data-file updated');
    end
end
end

```

```
function resp = T_getEnergy(data, resp)

if (length(data.rol_res)-length(data.c))==1
    % data.angle = [0;data.angle];
    data.rol_res=data.rol_res(2:end);
end

resp.rol_energy=(data.m_rider+data.m_moto)*data.g*data.c.*data.rol_res./resp.accel.*(resp.veloc(2:end).^2-resp.veloc(1:end-1).^2)*1/2;
resp.rol_energy(isnan(resp.rol_energy))=0;

resp.pitch_energy = (data.m_rider+data.m_moto)*data.g*data.s./resp.accel.*(resp.veloc(2:end).^2-resp.veloc(1:end-1).^2)*1/2;
resp.pitch_energy(isnan(resp.pitch_energy))=0;

resp.air_energy = 1/2*data.air_rho*data.s_x*data.c_x./resp.accel.*(resp.veloc(2:end).^4-resp.veloc(1:end-1).^4)*1/2;
resp.air_energy(isnan(resp.air_energy))=0;

resp.acc_energy = (data.m_rider+data.m_moto)*(1+data.delta).*(resp.veloc(2:end).^2-resp.veloc(1:end-1).^2)*1/2;
resp.acc_energy(isnan(resp.acc_energy))=0;

resp.energy = data.energy_correct*sum(resp.rol_energy+resp.pitch_energy+resp.air_energy+resp.acc_energy);
```

```

function resp = T_getVeloAcc(data)

if (length(data.rol_res)-length(data.angle))==1
%   data.angle = [0;data.angle];
    data.rol_res=data.rol_res(2:end);
end

res_idx=[data.rol_res==0.077,...
    data.rol_res==0.069,...
    data.rol_res==0.061,...
    data.rol_res==0.033];

velocity=zeros(length(data.angle),1);
for i = 1:4
    velocity(res_idx(:,i)) = polyval(data.model{i},data.angle(res_idx(:,i)));
end
% cut off negative speeds
velocity(velocity<data.min_velo)=data.min_velo;
% cap maximum speed
velocity(velocity>data.max_velo)=data.max_velo;

velocity = smooth(velocity,10);
% calc time needed to pass each segment
time_seg = data.delta_length./velocity;

% pad the array with zero
velocity = [0;velocity];

% calc acceleration
accel = (velocity(2:end)-velocity(1:end-1))./time_seg;

% cut-off accelerations
accel(abs(accel)>data.max_accel)=sign(accel(abs(accel)>data.max_accel))*data.max_accel;

resp.veloc = velocity;
resp.accel = accel;

```

```
function data = T_getConstants(data)

changes = 0;
if ~isfield(data, 'min_velo')
    changes = 1;
    % air resistance
    data.c_x = 0.68;
    % rider weight (in kg)
    data.m_rider = 80;
    % motorcycle weight
    data.m_moto = 65;
    % air density (kg/m^3)
    data.air_rho = 1.2;
    % front x-section (m^2)
    data.s_x = 0.9902 ;
    % coeff of rotary mass
    data.delta = 0.12;
    % grav. acceleration (m/s^2)
    data.g = 9.81;
    % dyn radius of wheel
    data.r_d = 0.305;
    % battery capacity in [kJ]
    data.bat_capacity = 9185;
    % max bike velocity
    data.max_velo = 55/3.6;
    % min bike velocity
    data.min_velo = 1;
    % max bike accel in absolute value
    data.max_accel = 3;

    data.energy_correct = 0.638;
```



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Current Folder

Name ▲

- input
  - data.mat
  - import2.txt
  - import\_test.txt
  - measured\_data.mat
  - measured\_data\_2.mat
  - track\_data.mat
  - track\_data\_1.mat
  - track\_data\_2.mat
  - track\_data\_3.mat
  - track\_data\_4.mat
  - track\_data\_5.mat
  - track\_data\_6.mat
  - track\_data\_7.mat
  - track\_data\_8.mat
  - track\_data\_9.mat
  - track\_data\_10.mat
  - track\_data\_11.mat
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  - track\_data\_13.mat
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  - track\_data\_27.mat
  - track\_data\_28.mat
  - track\_data\_29.mat

import2.txt (Text Document)

EDITOR VIEW

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FILE NAVIGATE

main.m import2.txt +

```
1 Distance (m), Elevation (m)
2 0, 581.7607421875
3 3.037878257680664, 581.8555297851562
4 6.075756515361328, 581.9479370117188
5 9.113634773041992, 582.0322265625
6 12.151513030722656, 582.090087890625
7 15.18939128840332, 582.1463623046875
8 18.227269546083985, 582.2009887695312
9 21.26514780376465, 582.2540893554688
10 24.303026061445312, 582.3056030273438
11 27.340904319125976, 582.35546875
12 30.37878257680664, 582.3809814453125
13 33.4166608344873, 582.40234375
14 36.45453909216797, 582.4234619140625
15 39.49241734984863, 582.4442749023438
16 42.5302956075293, 582.4647827148438
17 45.56817386520996, 582.4849853515625
18 48.606052122890624, 582.5048828125
19 51.64393038057129, 582.5545043945312
20 54.68180863825195, 582.6527099609375
21 57.71968689593262, 582.7515869140625
22 60.75756515361328, 582.8510131835938
23 63.795443411293945, 582.9509887695312
24 66.8333216689746, 583.0668334960938
25 69.87119992665527, 583.190673828125
26 72.90907818433594, 583.3171997070312
27 75.9469564420166, 583.4464721679688
28 78.98483469969726, 583.5785522460938
29 82.02271295737793, 583.6973876953125
30 85.0605912150586, 583.8125
```