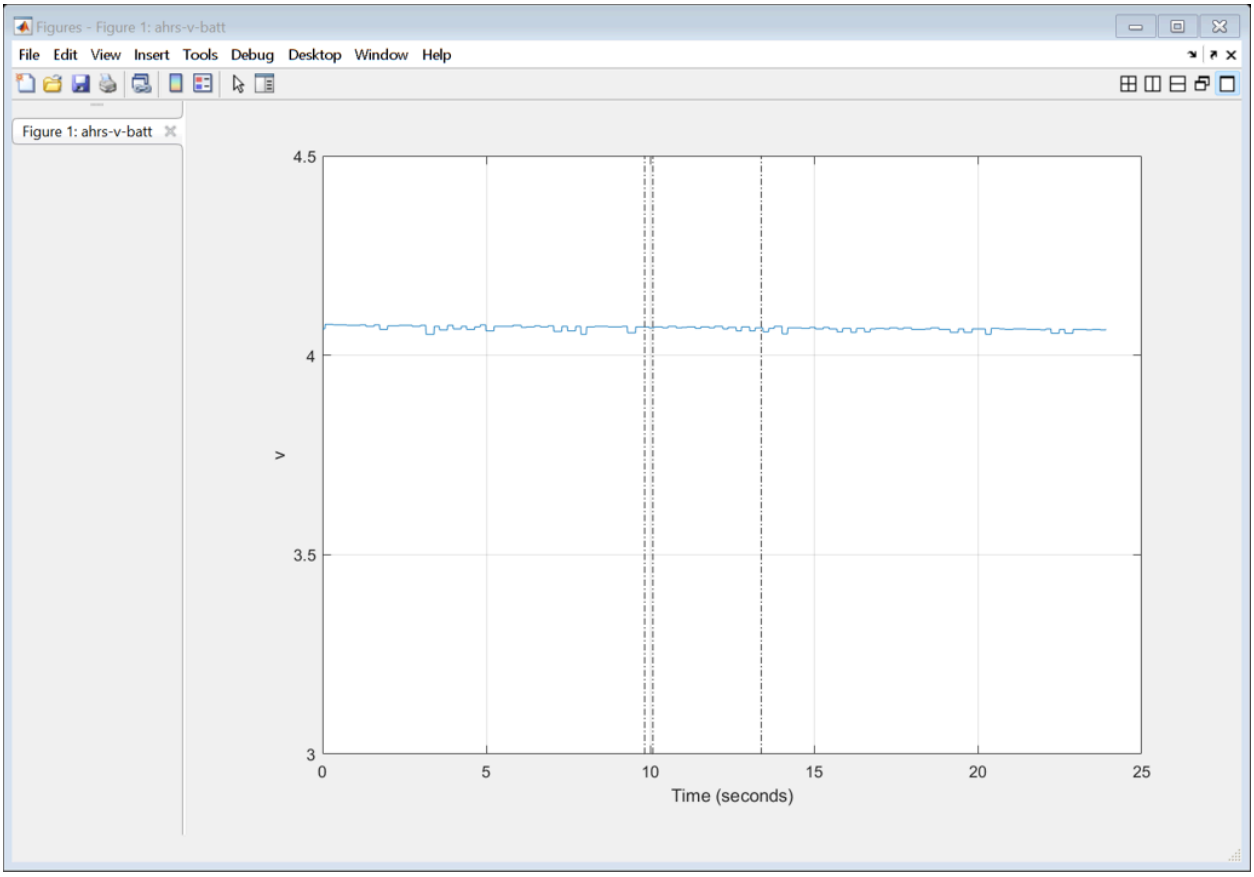
Table of Contents

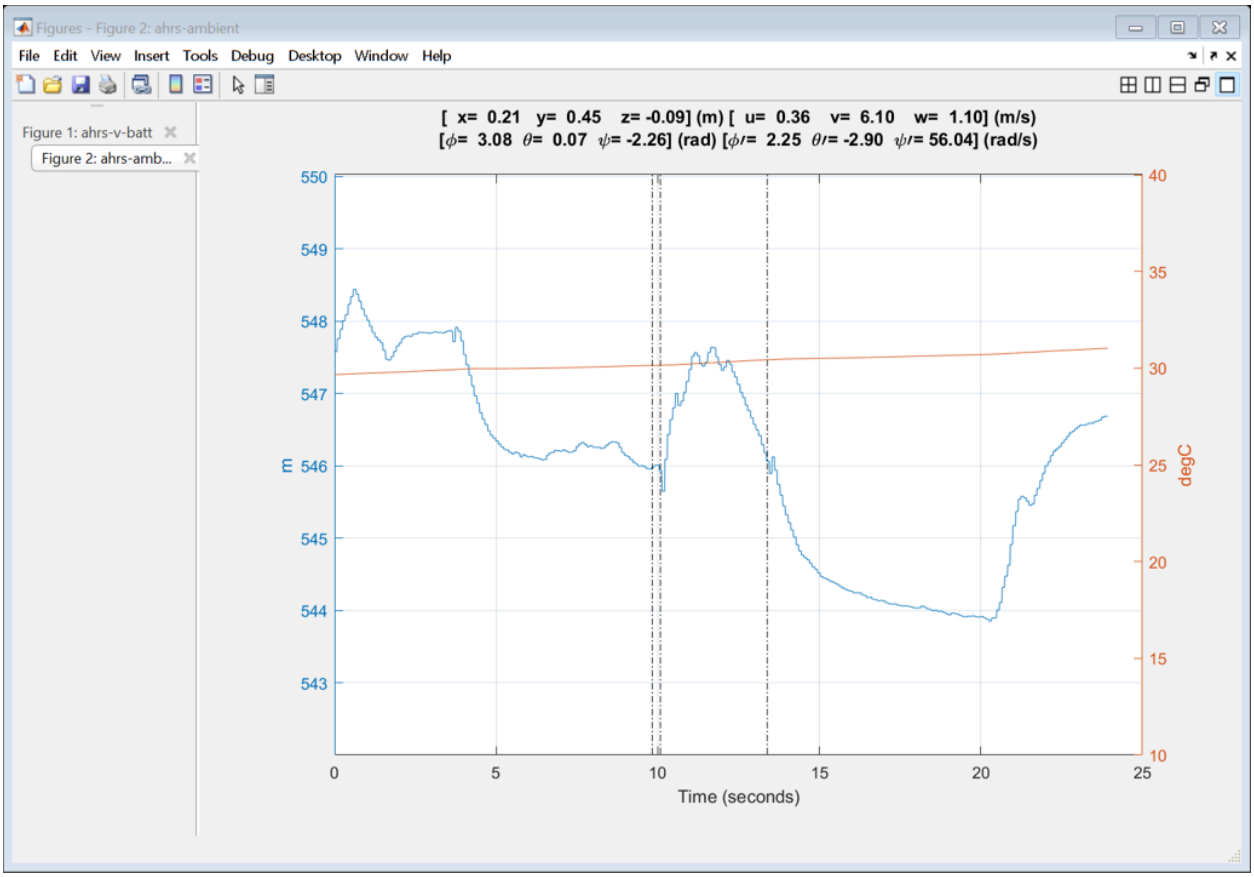
flatball log report 1
available datalogs 21
work-in-progress 21

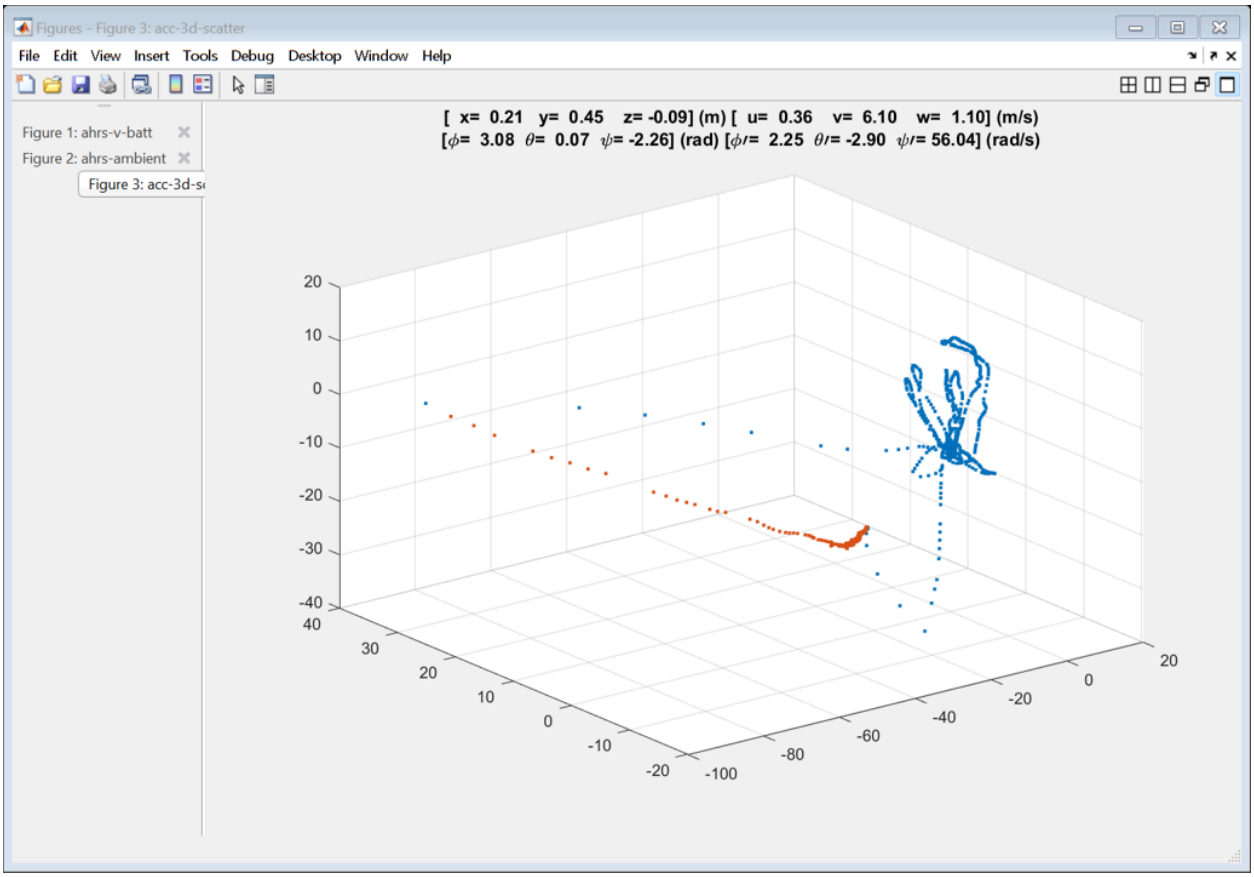
flatball log report

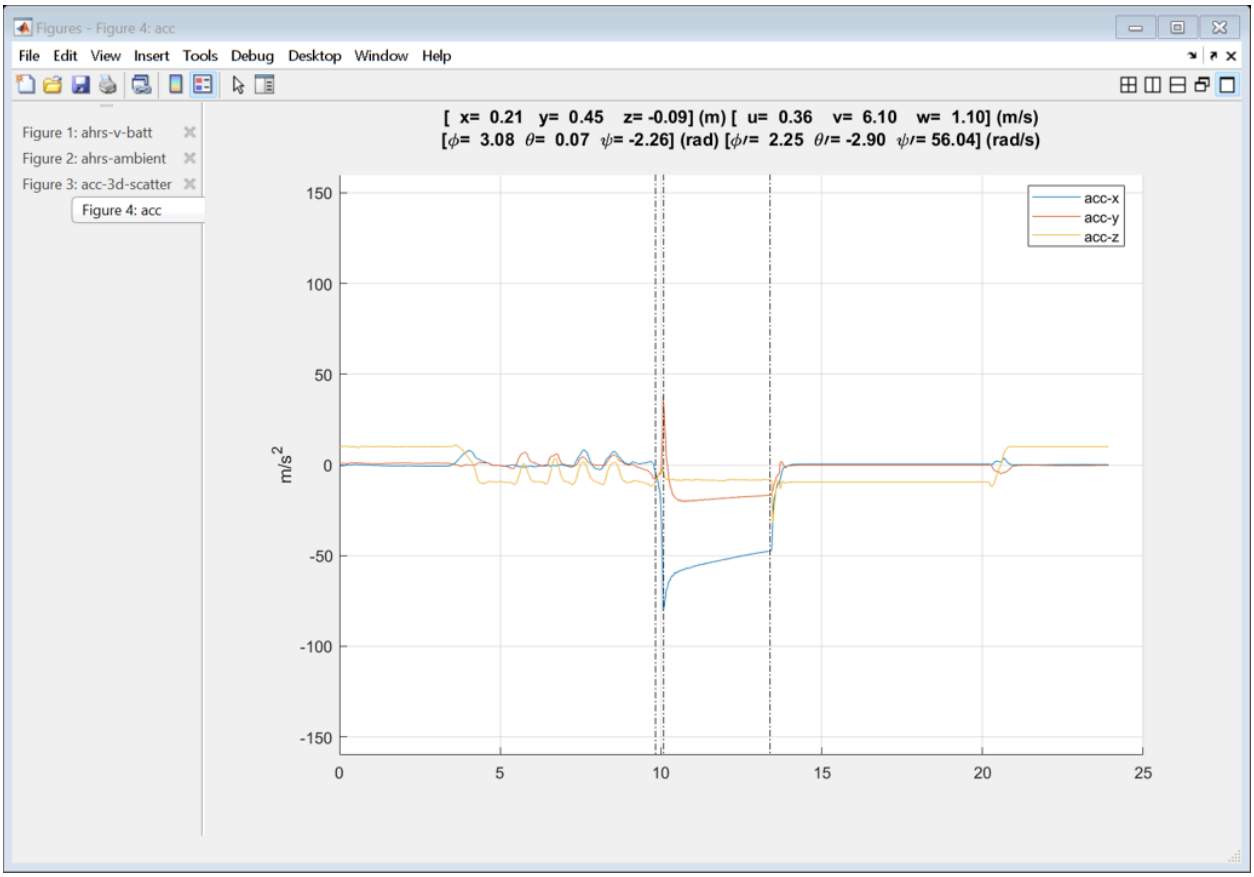
```
% take care of paths and initalizations
addpath( genpath( 'arxiv/data'));
flatball_6dof_init;

% load datalog and generate plots
csv_fname = '2025-08-31-002-rb';
tsc = flatball_log_proc( which( [csv_fname '.csv']));
flatball_log_plots( tsc)
```

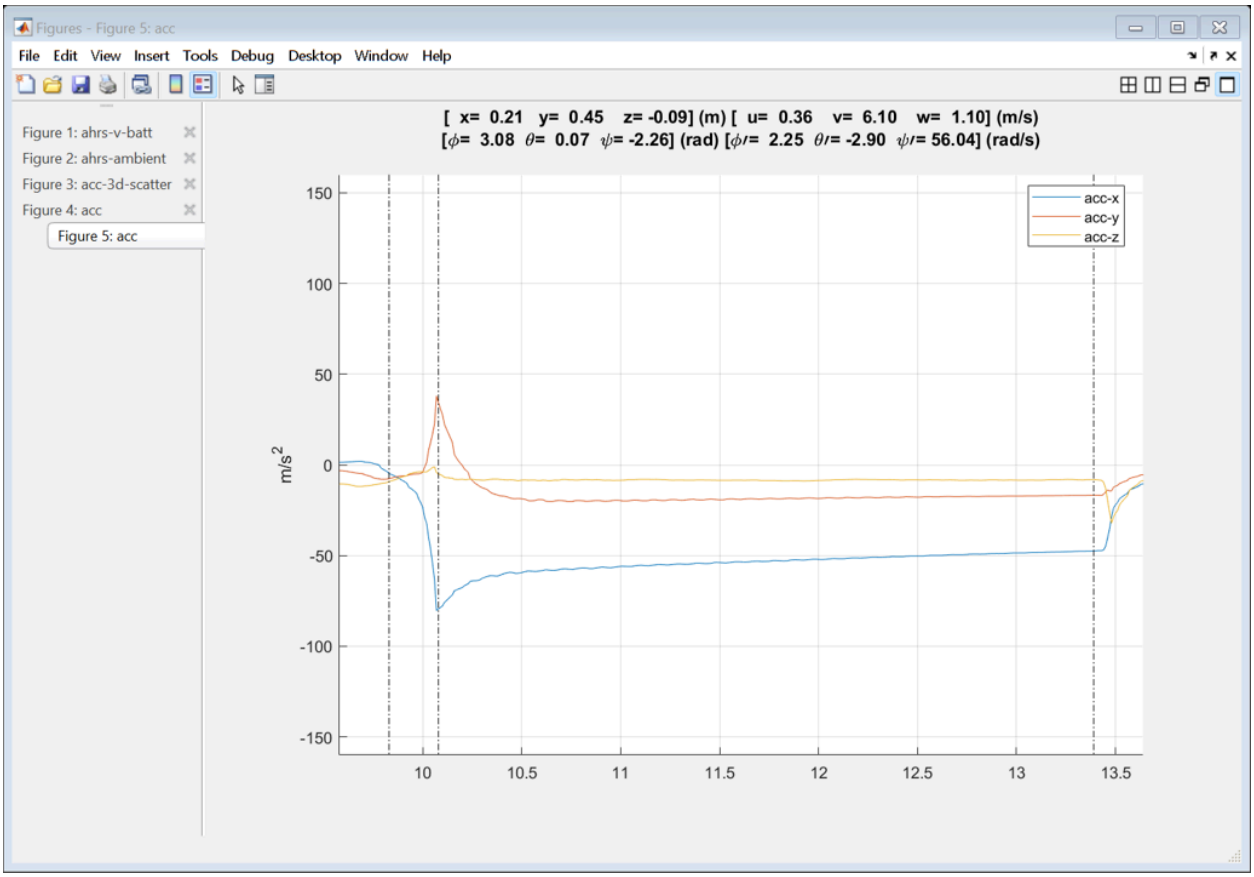
```
Warning: Column headers from the file were modified to make them valid MATLAB
identifiers before creating variable names for the table. The original column
headers are saved in the VariableDescriptions property.
Set 'VariableNamingRule' to 'preserve' to use the original column headers as
table variable names.
Parsing v33 csv...
```

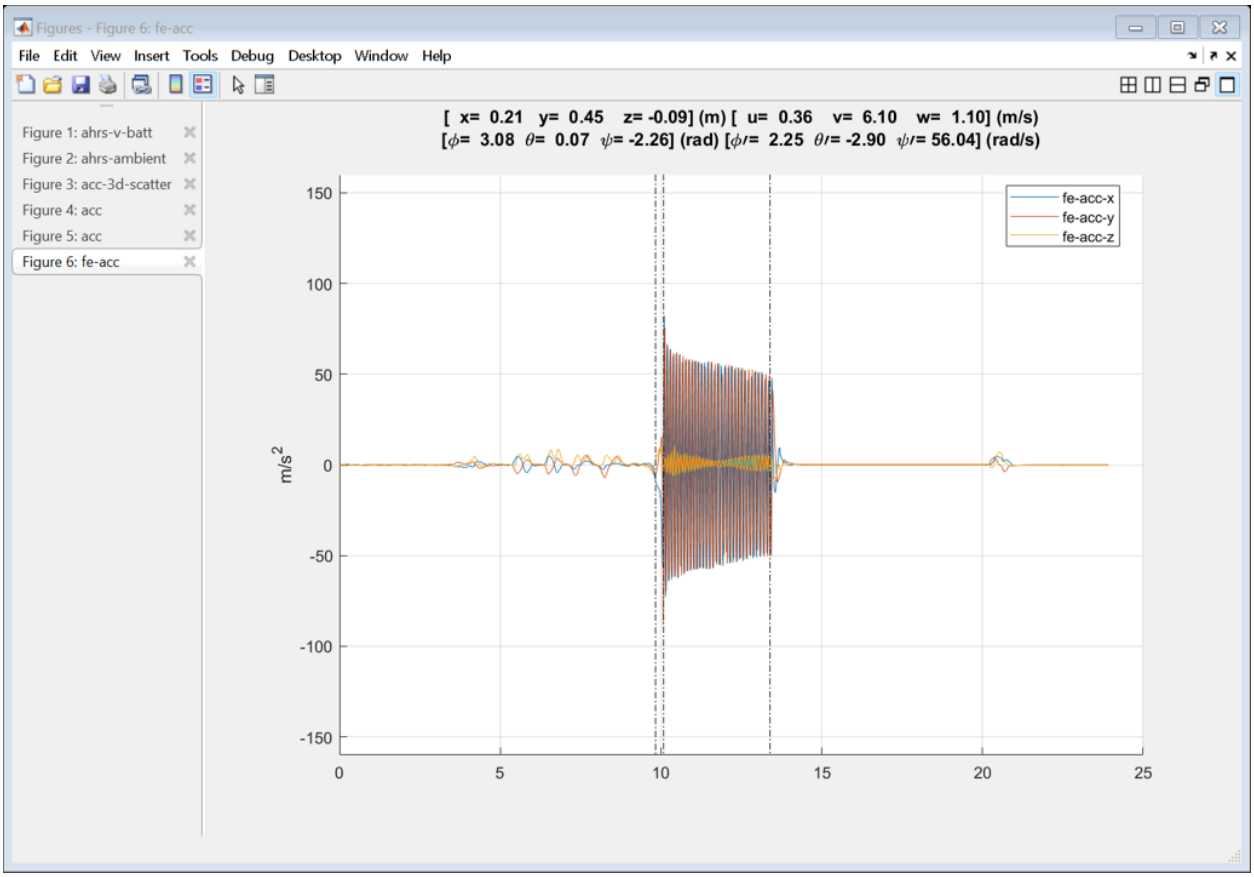


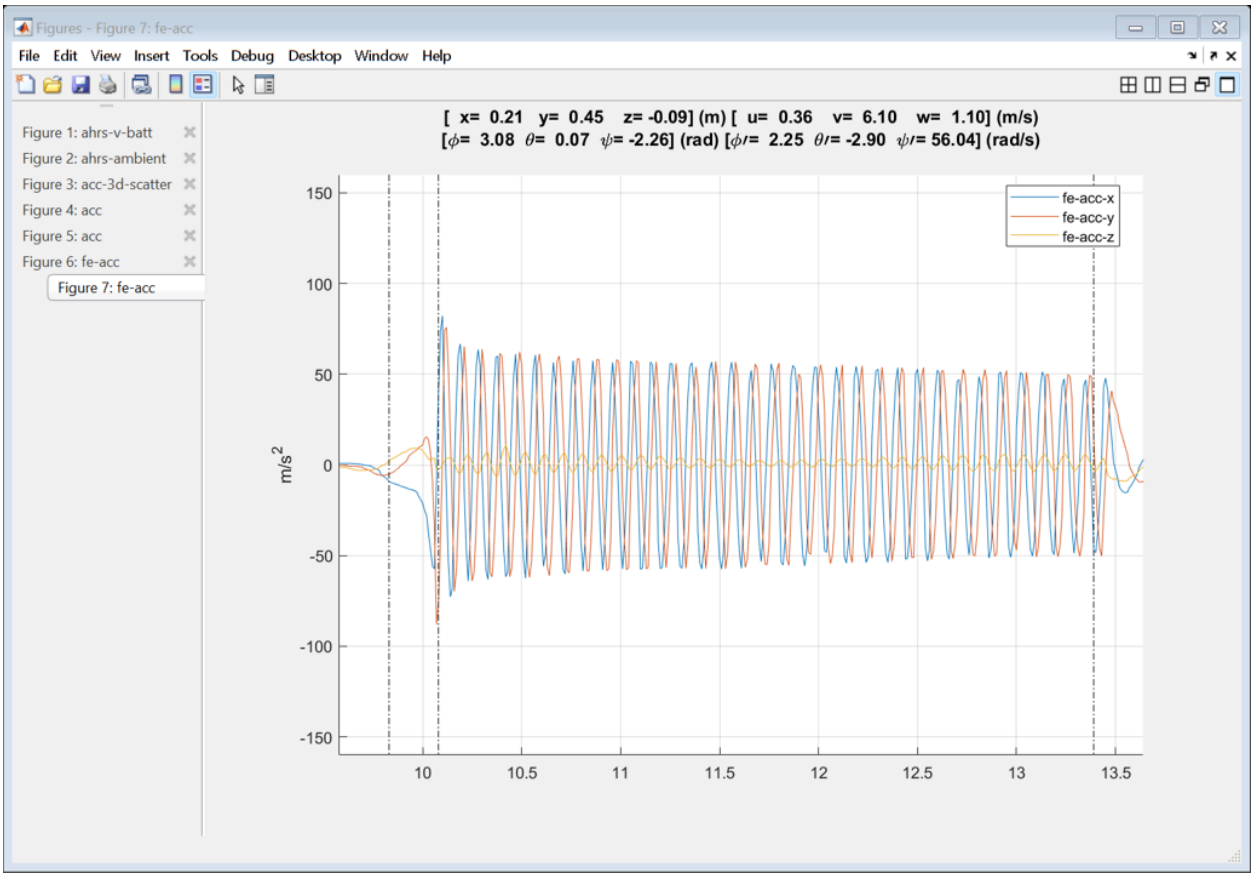

Figures - Figure 2: ahrs-ambient
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-amb...
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
550
549
548
547
546
545
544
543
m
40
35
30
25
20
15
10
degC
0
5
10
15
20
25
Time (seconds)

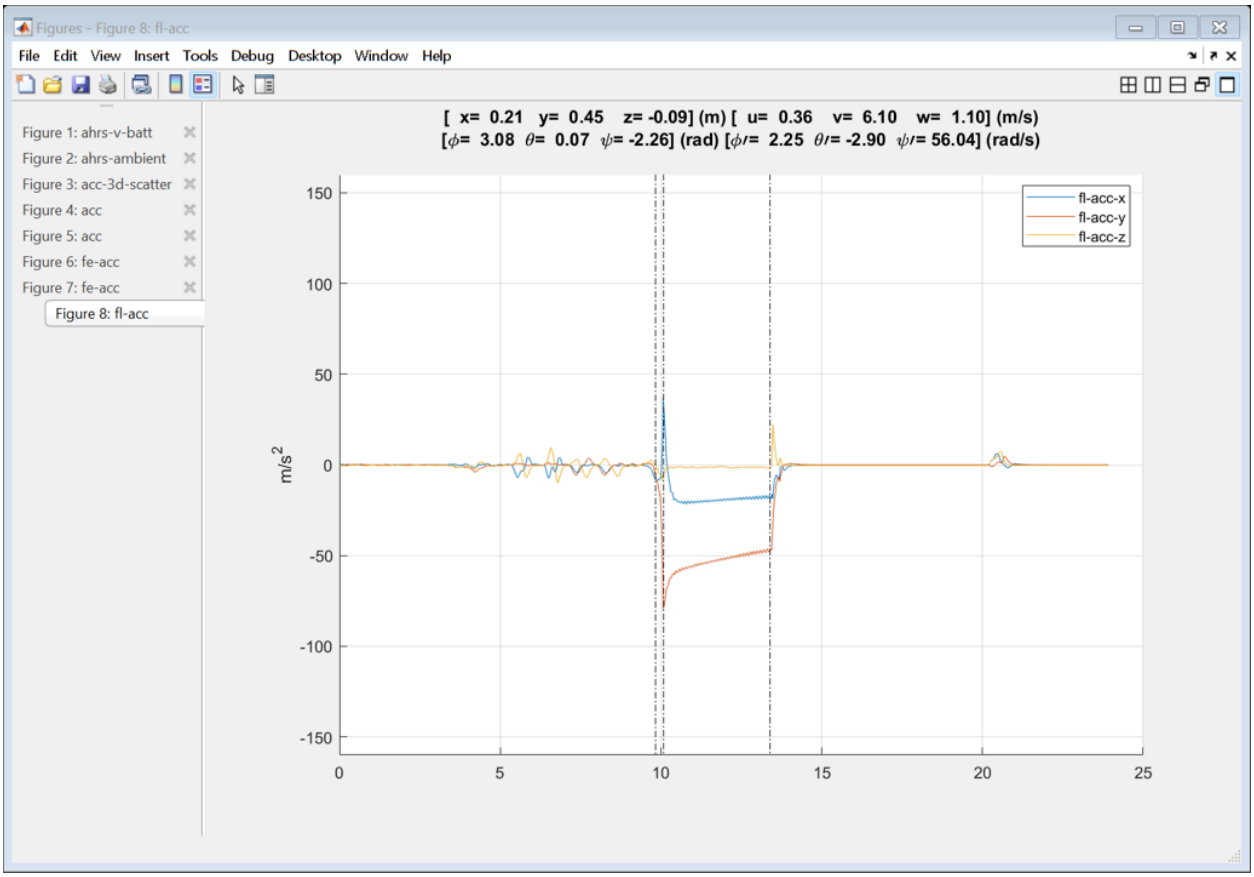

Figures - Figure 3: acc-3d-scatter
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-s
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕr= 2.25 θr= -2.90 ψr= 56.04] (rad/s)
20
10
0
-10
-20
-30
-40
40
30
20
10
0
-10
-20
-100
-80
-60
-40
-20
0
20

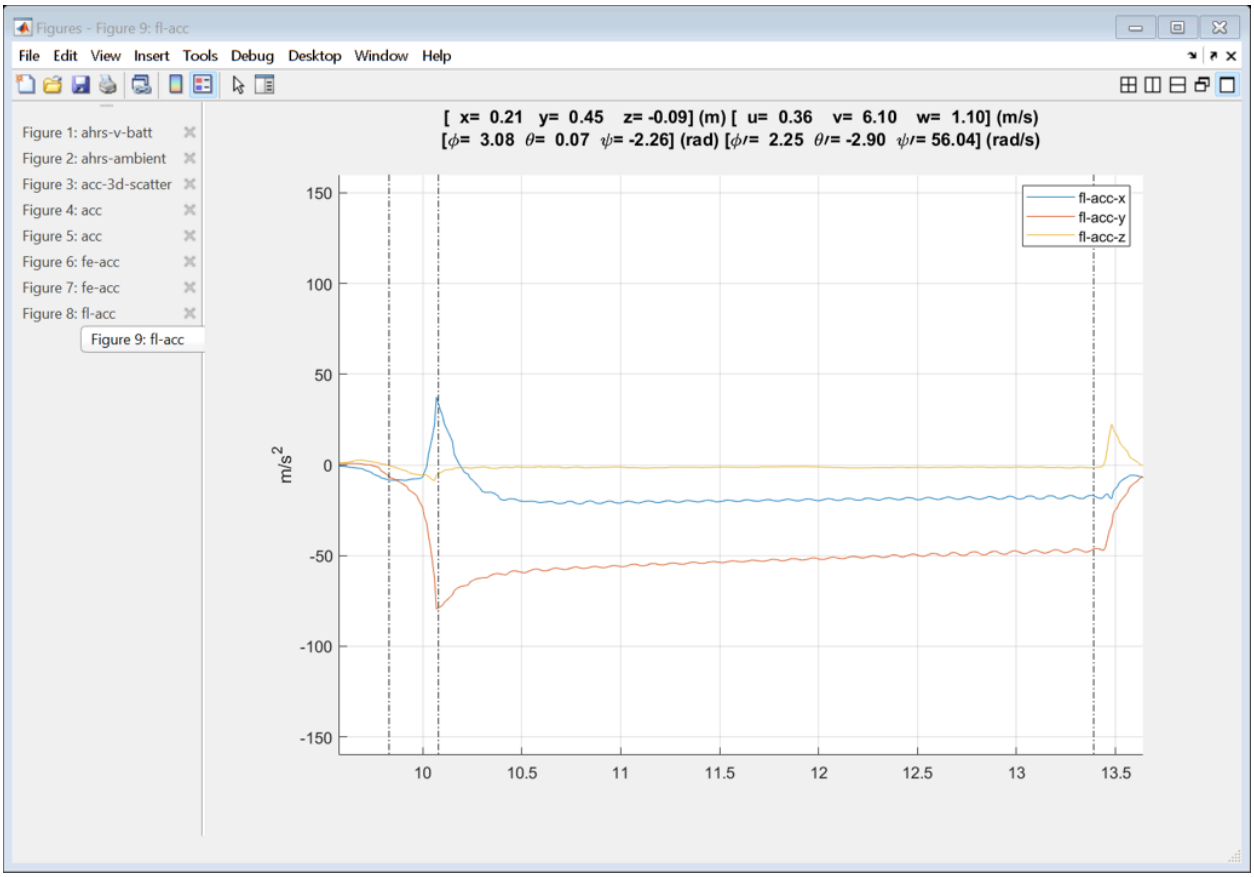

Figures - Figure 4: acc
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕr= 2.25 θr= -2.90 ψr= 56.04] (rad/s)
acc-x
acc-y
acc-z
m/s2
150
100
50
0
-50
-100
-150
0
5
10
15
20
25

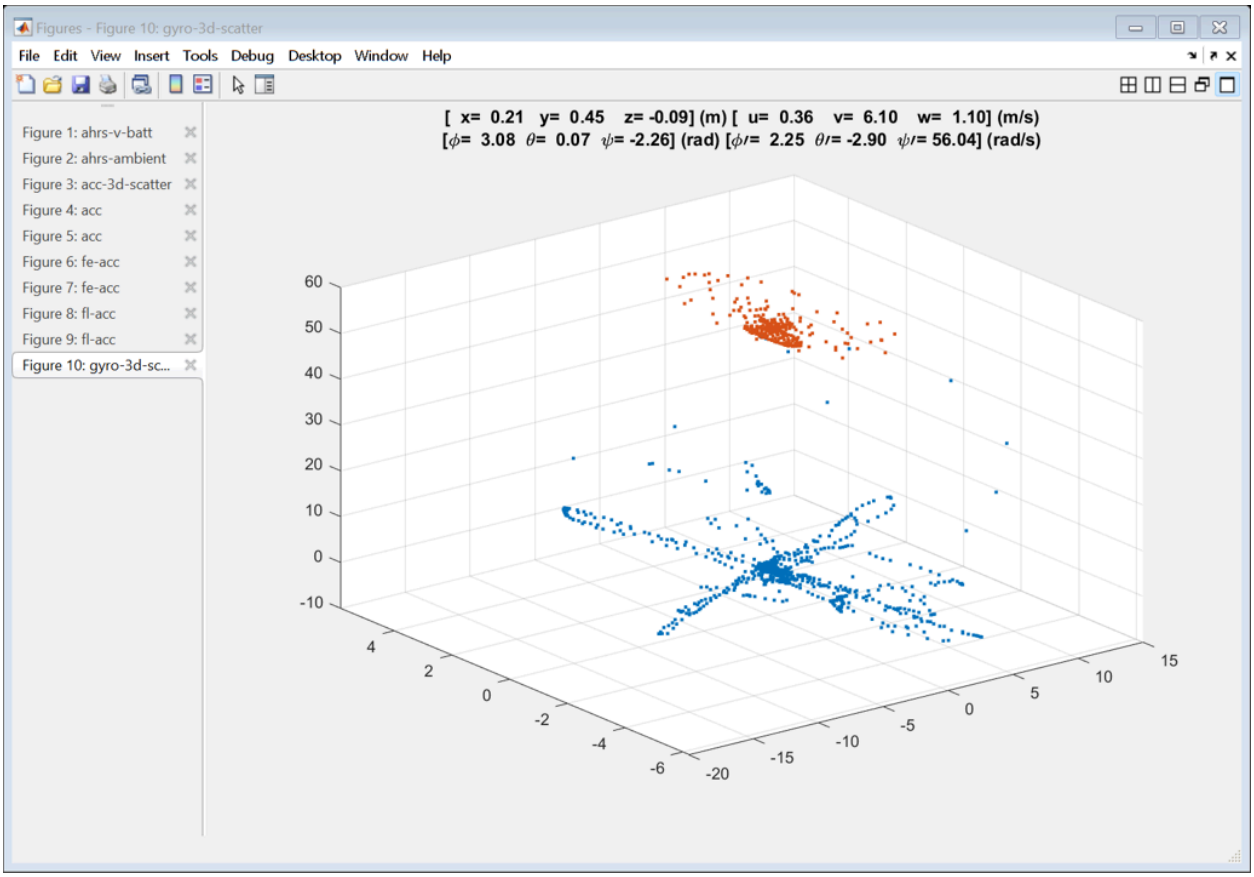

Figures - Figure 5: acc
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕr= 2.25 θr= -2.90 ψr= 56.04] (rad/s)
acc-x
acc-y
acc-z
m/s2
150
100
50
0
-50
-100
-150
10
10.5
11
11.5
12
12.5
13
13.5

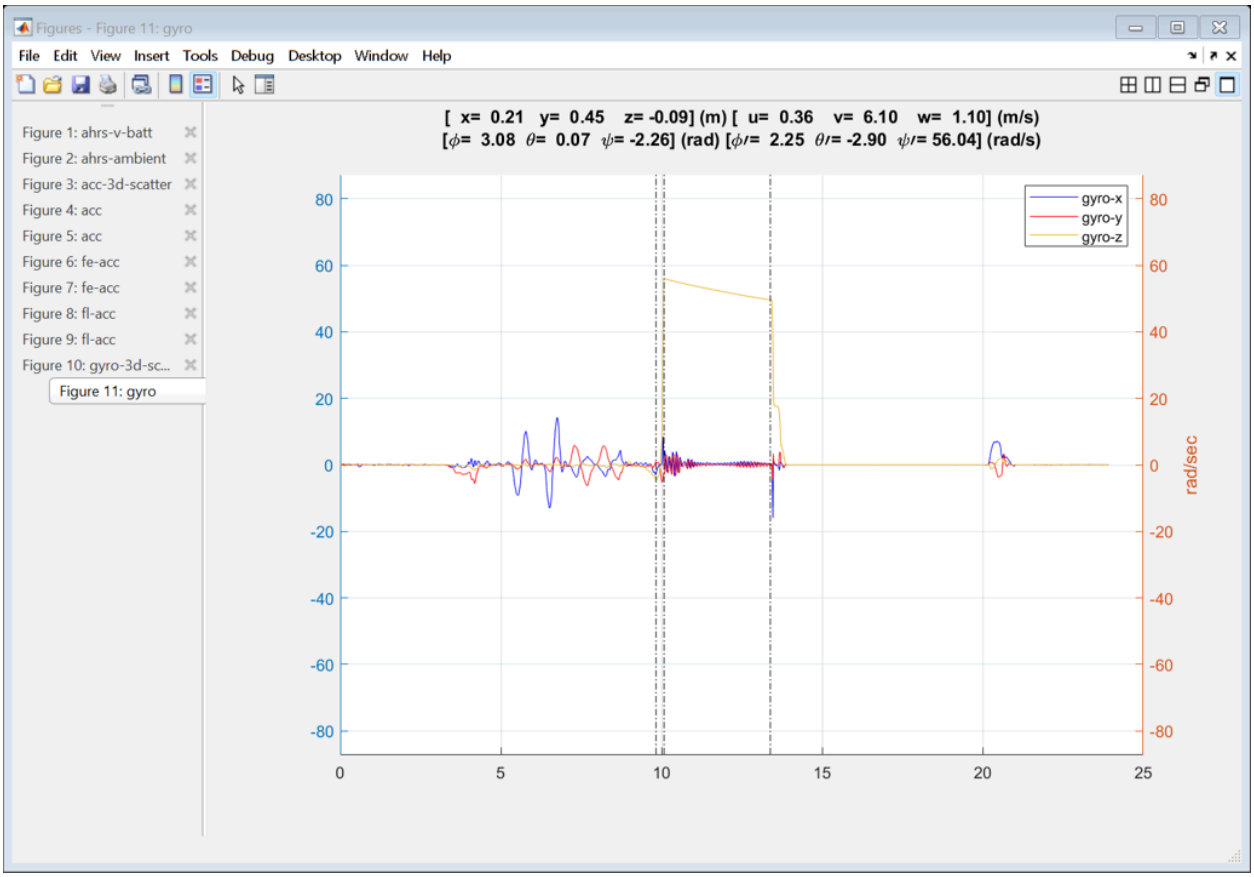

Figures - Figure 6: fe-acc
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕr= 2.25 θr= -2.90 ψr= 56.04] (rad/s)
fe-acc-x
fe-acc-y
fe-acc-z
m/s2
150
100
50
0
-50
-100
-150
0
5
10
15
20
25

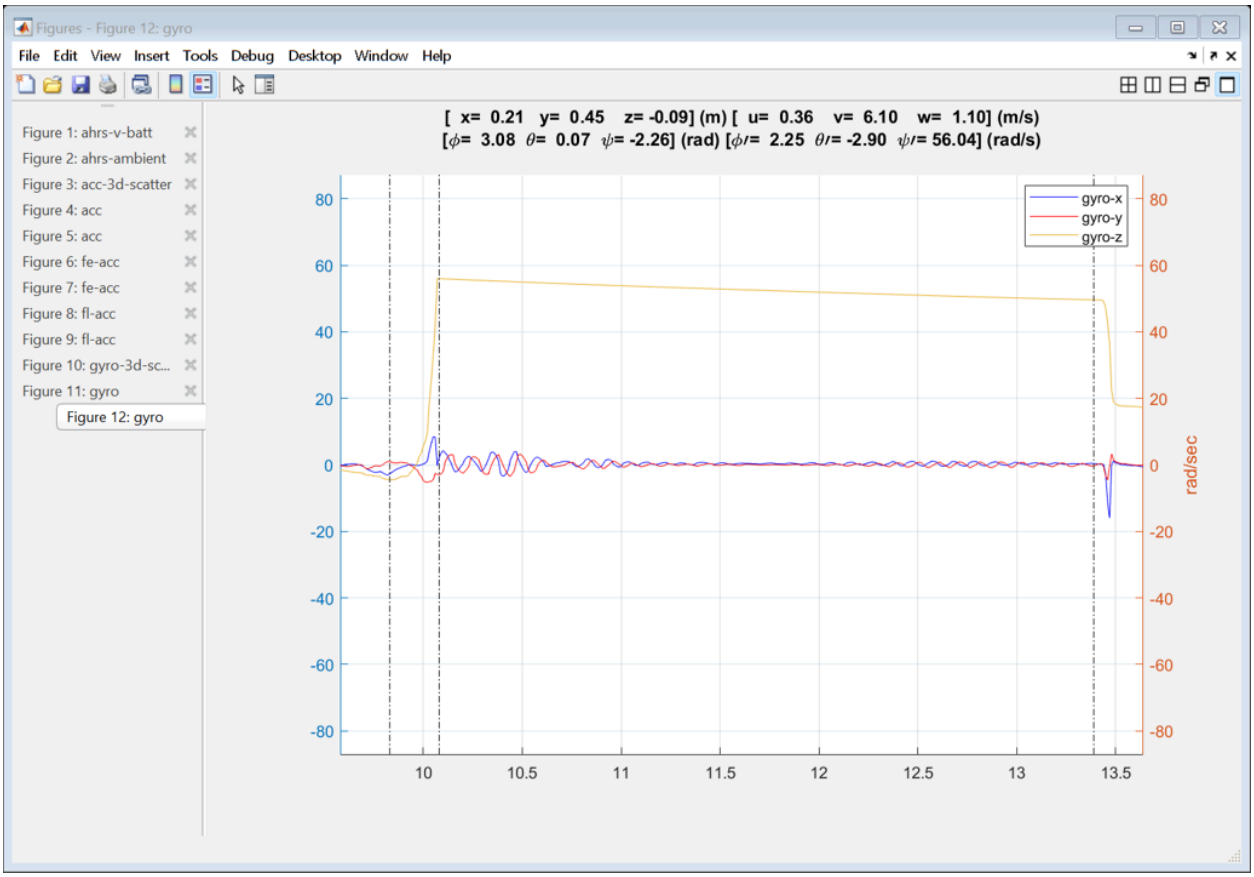

Figures - Figure 7: fe-acc
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕr= 2.25 θr= -2.90 ψr= 56.04] (rad/s)
fe-acc-x
fe-acc-y
fe-acc-z
m/s2
150
100
50
0
-50
-100
-150
10
10.5
11
11.5
12
12.5
13
13.5

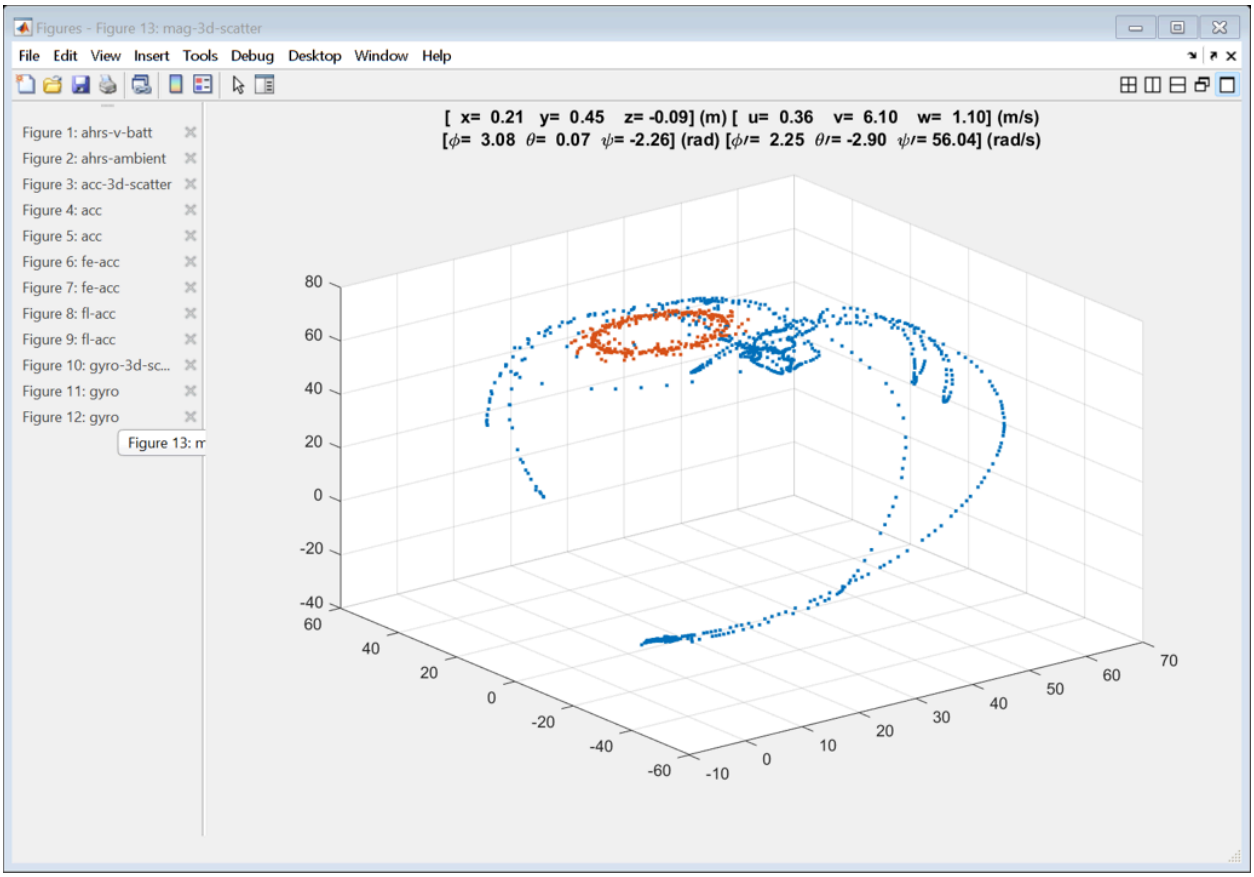

Figures - Figure 8: fl-acc
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕr= 2.25 θr= -2.90 ψr= 56.04] (rad/s)
fl-acc-x
fl-acc-y
fl-acc-z
m/s2
150
100
50
0
-50
-100
-150
0
5
10
15
20
25

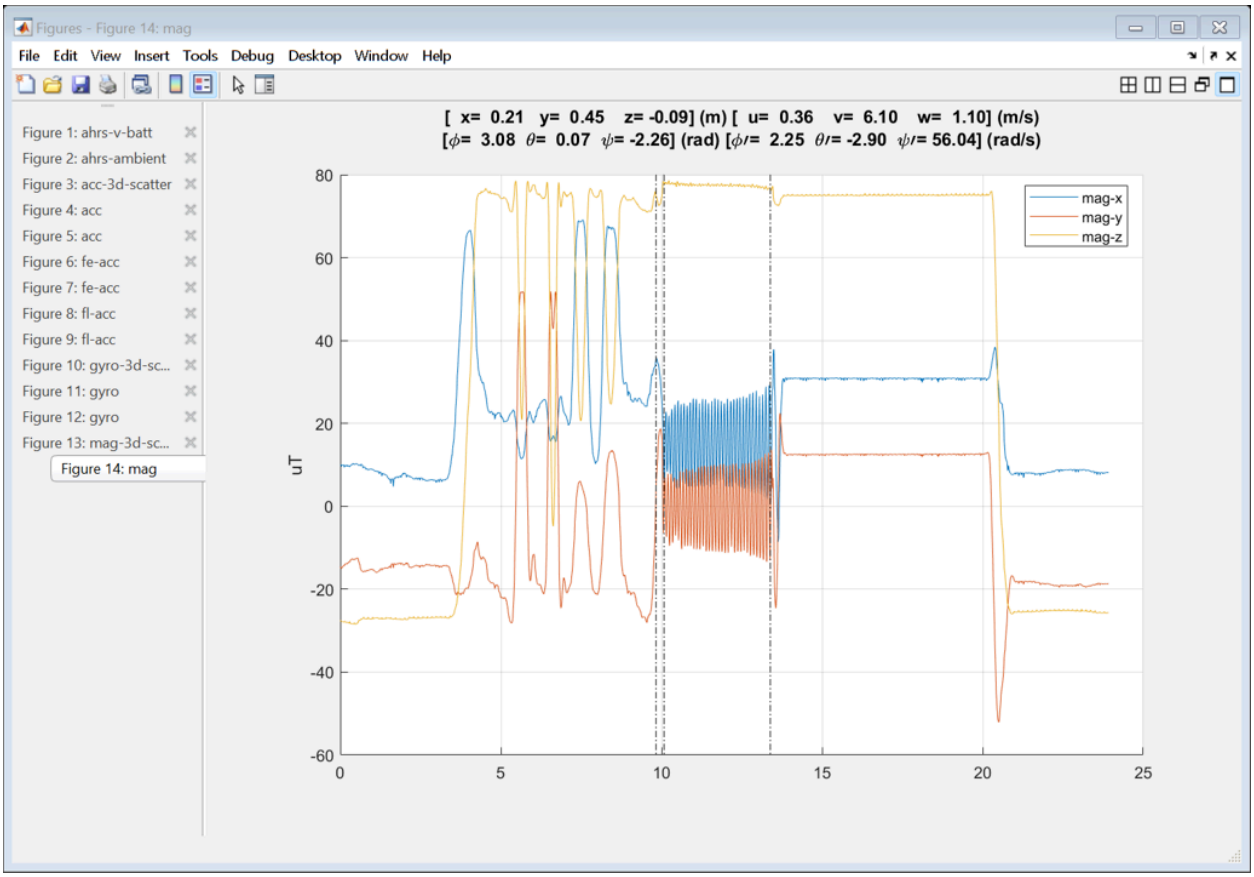

Figures - Figure 9: fl-acc
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕr= 2.25 θr= -2.90 ψr= 56.04] (rad/s)
fl-acc-x
fl-acc-y
fl-acc-z
m/s2
150
100
50
0
-50
-100
-150
10
10.5
11
11.5
12
12.5
13
13.5

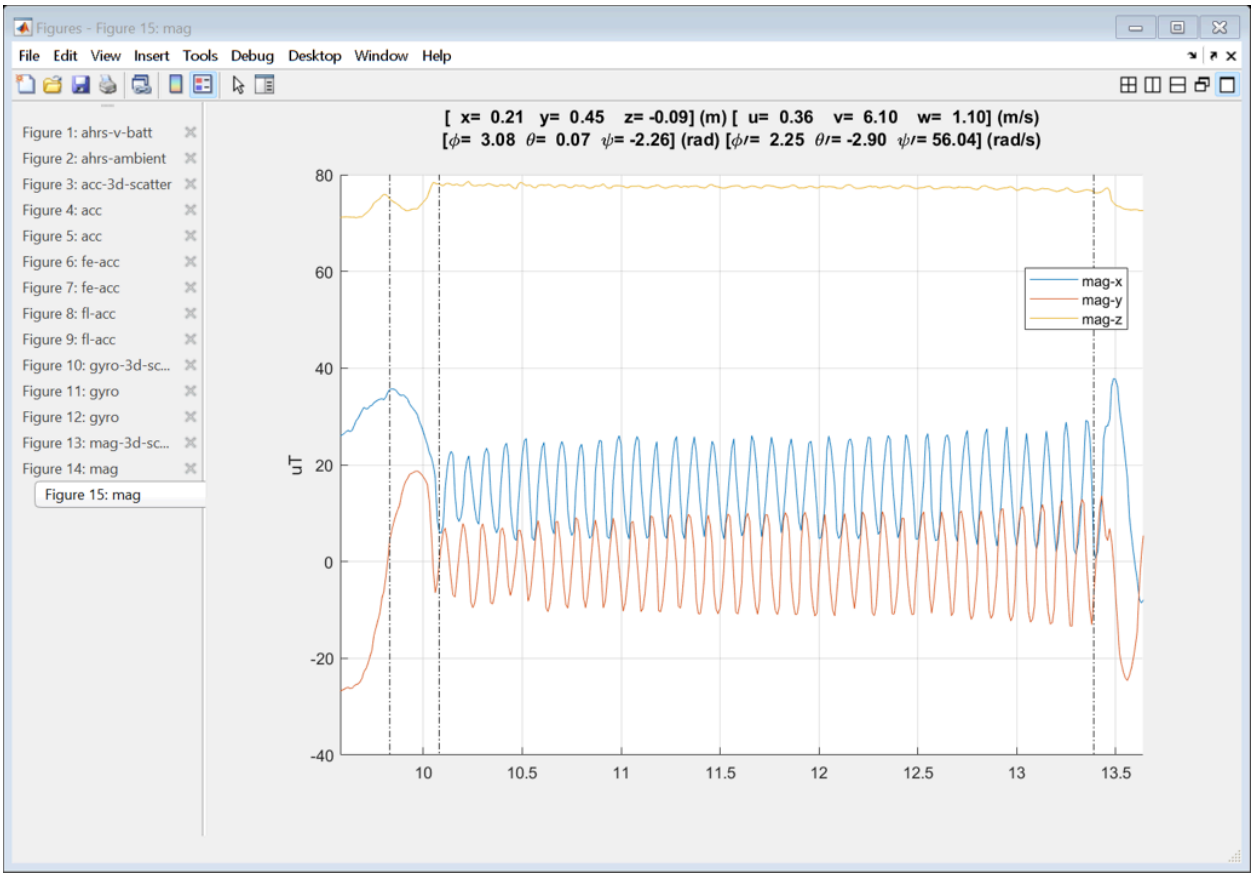

Figures - Figure 10: gyro-3d-scatter
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ𝑟= 2.25 θ𝑟= -2.90 ψ𝑟= 56.04] (rad/s)
60
50
40
30
20
10
0
-10
4
2
0
-2
-4
-6
-20
-15
-10
-5
0
5
10
15

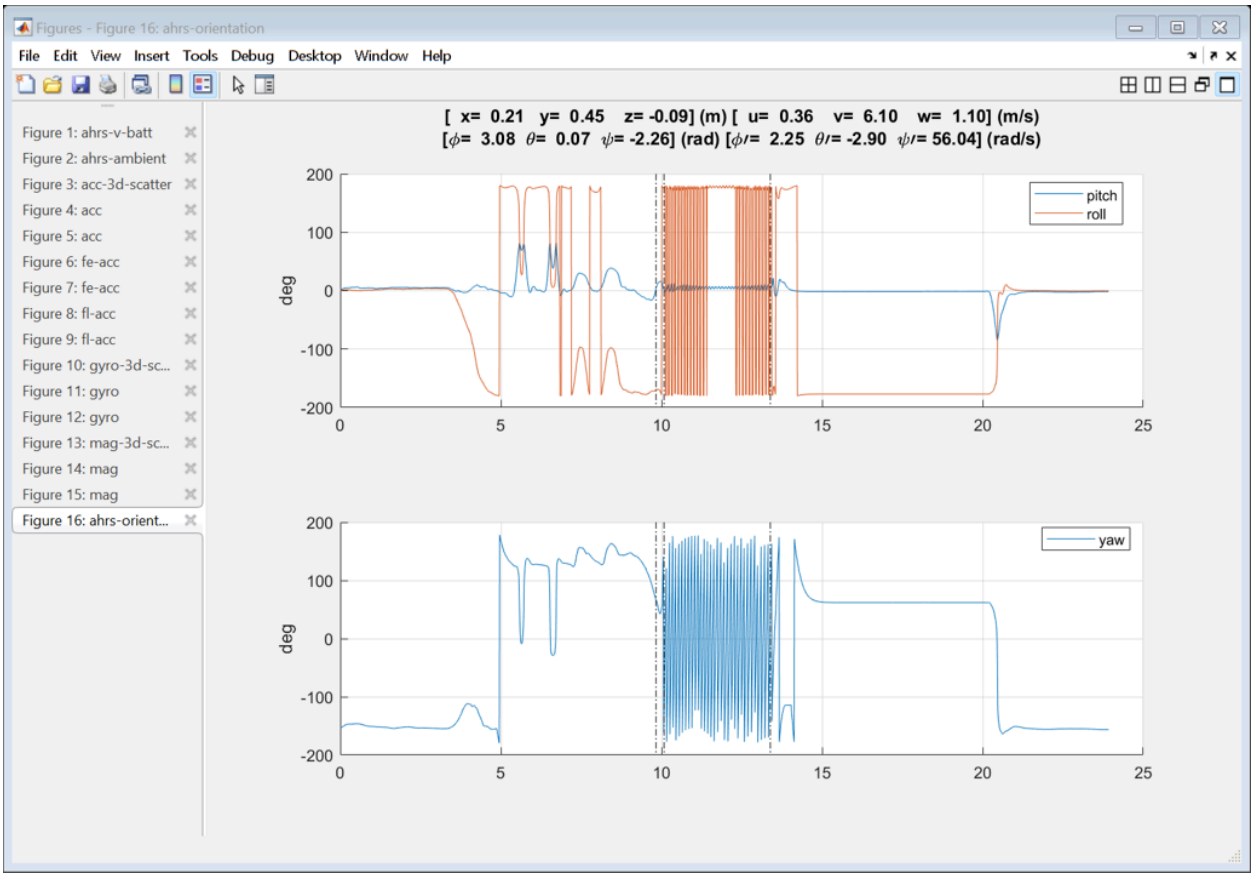

Figures - Figure 11: gyro
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
gyro-x
gyro-y
gyro-z
rad/sec

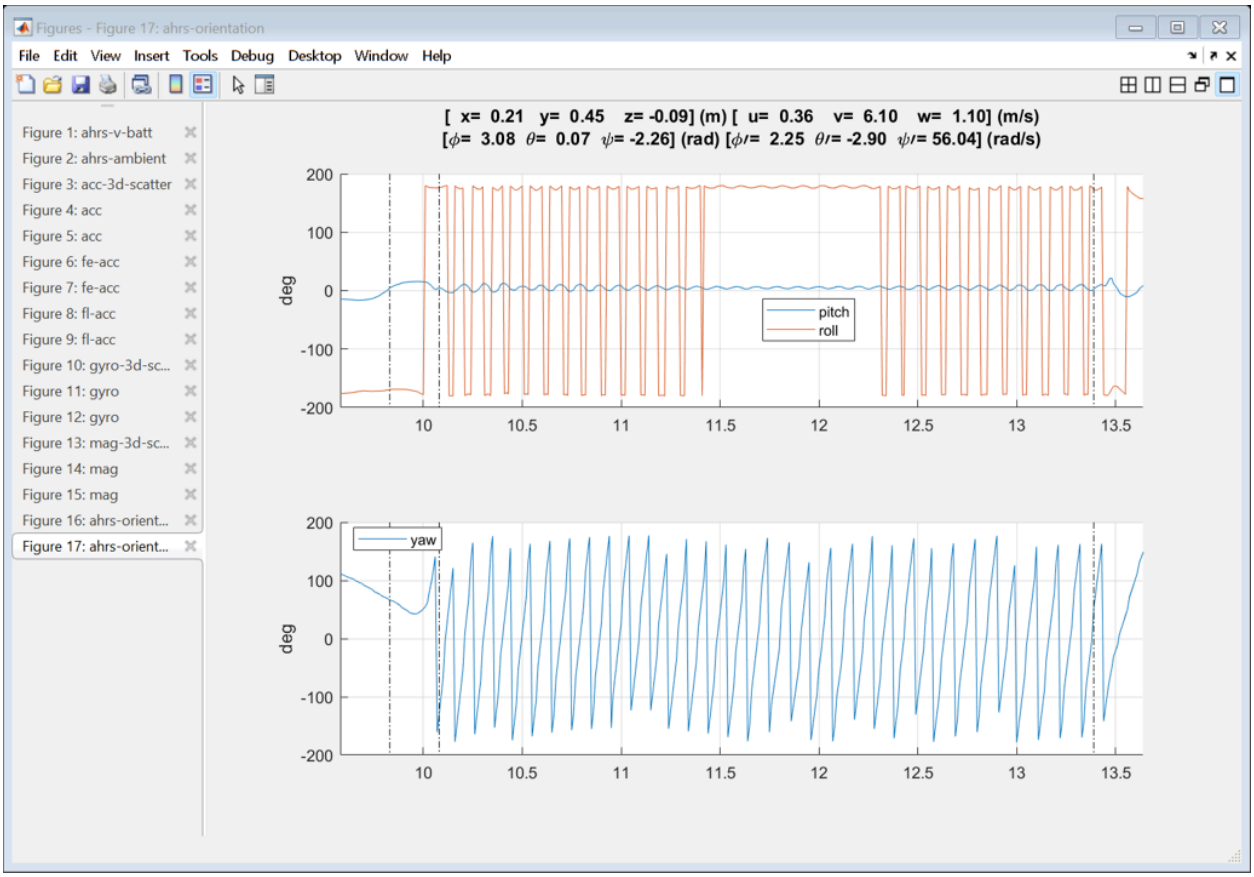

Figures - Figure 12: gyro
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
gyro-x
gyro-y
gyro-z
rad/sec
80
60
40
20
0
-20
-40
-60
-80
10
10.5
11
11.5
12
12.5
13
13.5

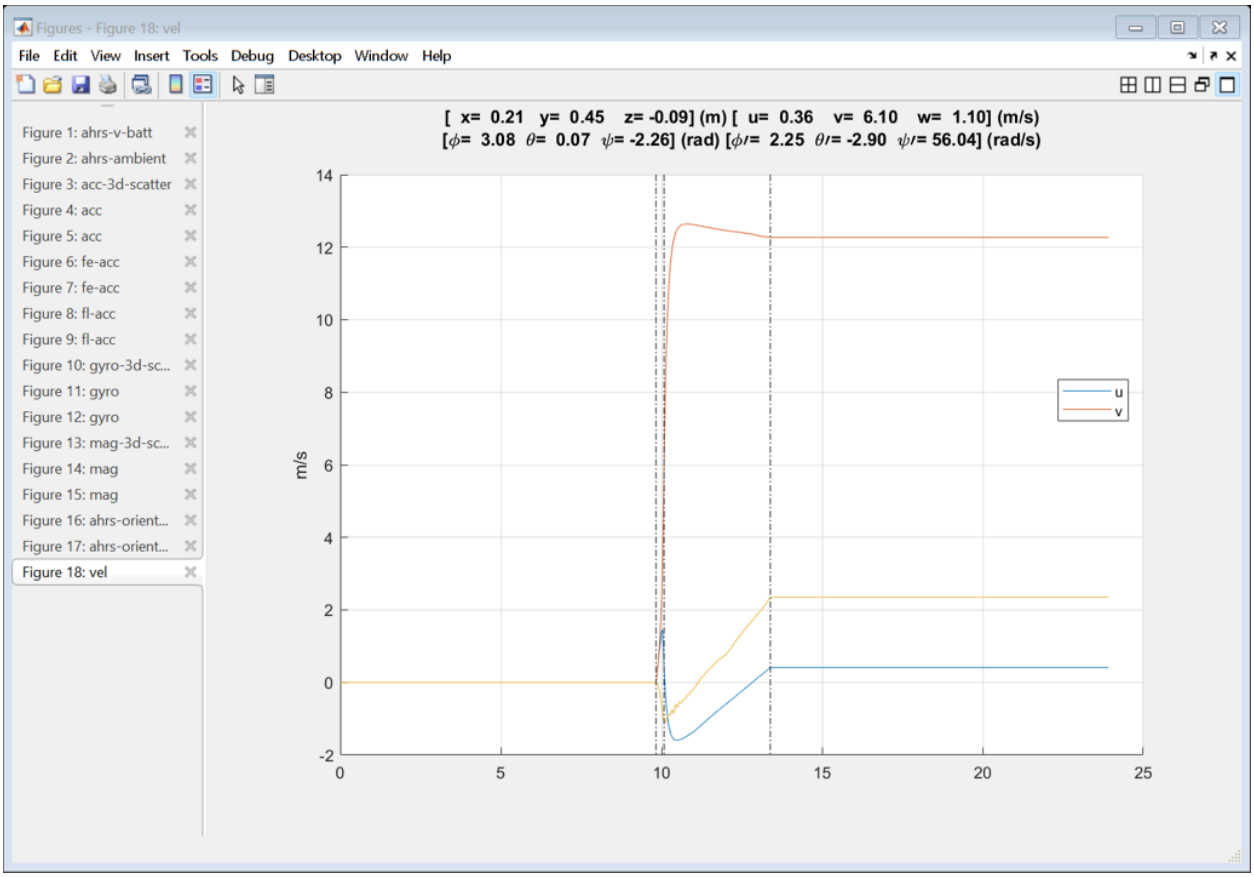

Figures - Figure 13: mag-3d-scatter
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: m
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
80
60
40
20
0
-20
-40
60
40
20
0
-20
-40
-60
-10
0
10
20
30
40
50
60
70

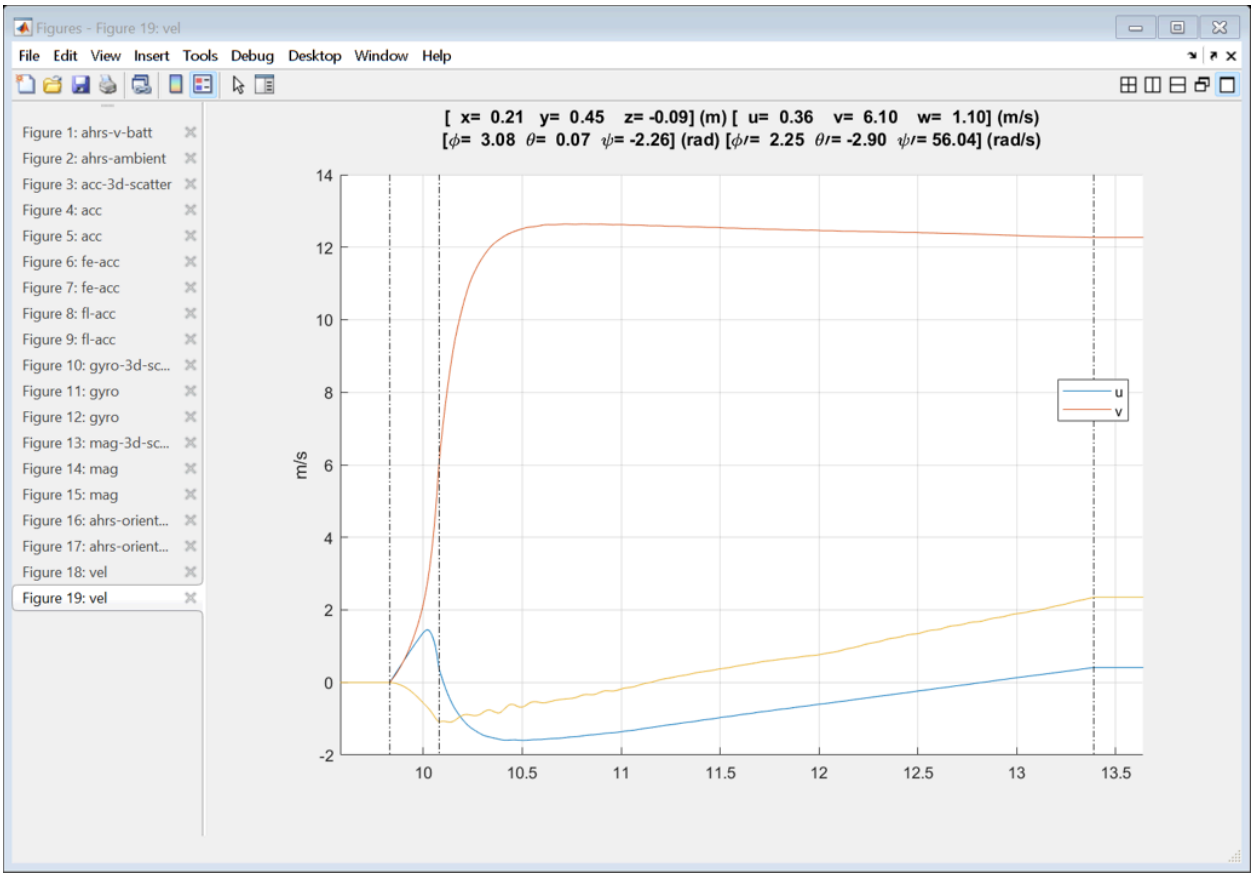

Figures - Figure 14: mag
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: mag-3d-sc...
Figure 14: mag
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
mag-x
mag-y
mag-z
uT
80
60
40
20
0
-20
-40
-60
0
5
10
15
20
25

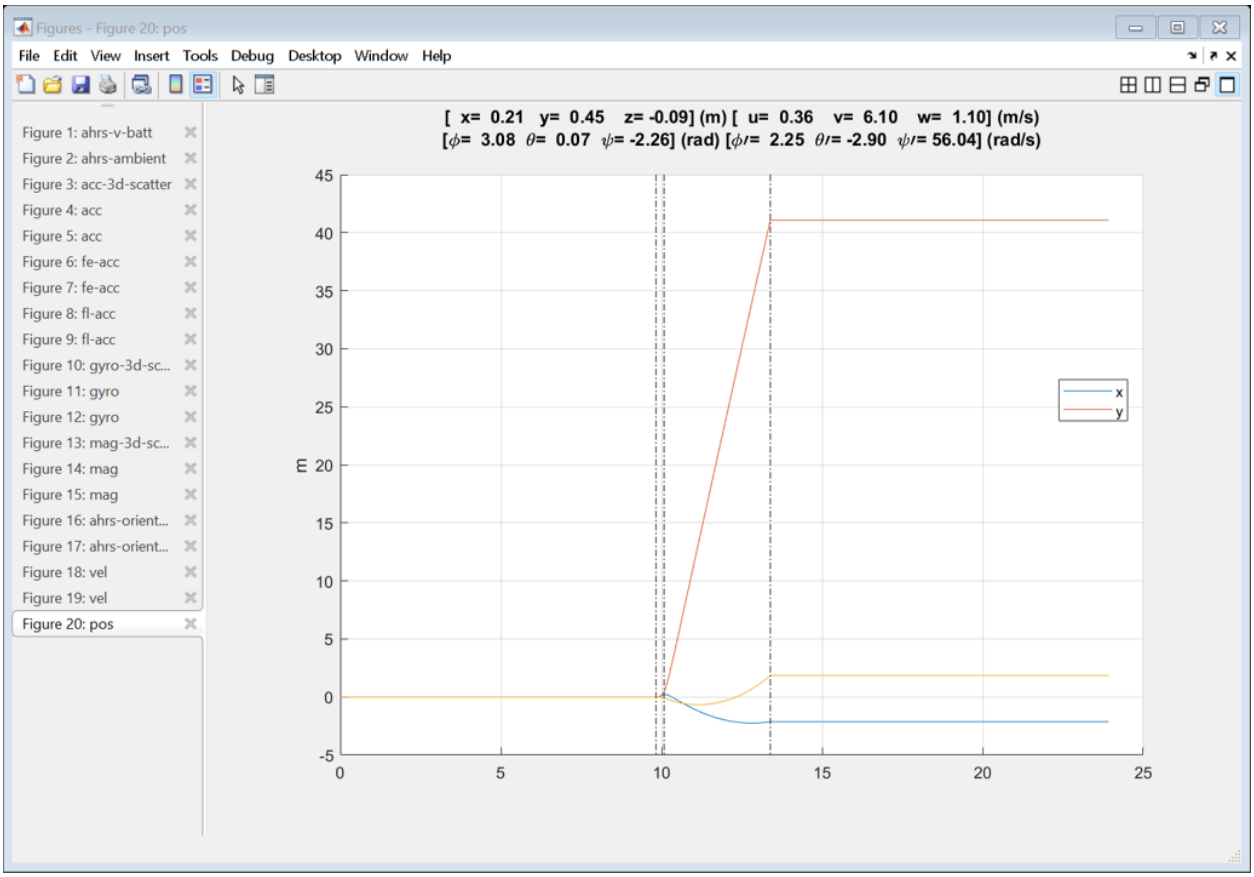

Figures - Figure 15: mag
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: mag-3d-sc...
Figure 14: mag
Figure 15: mag
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
mag-x
mag-y
mag-z
uT
80
60
40
20
0
-20
-40
10
10.5
11
11.5
12
12.5
13
13.5

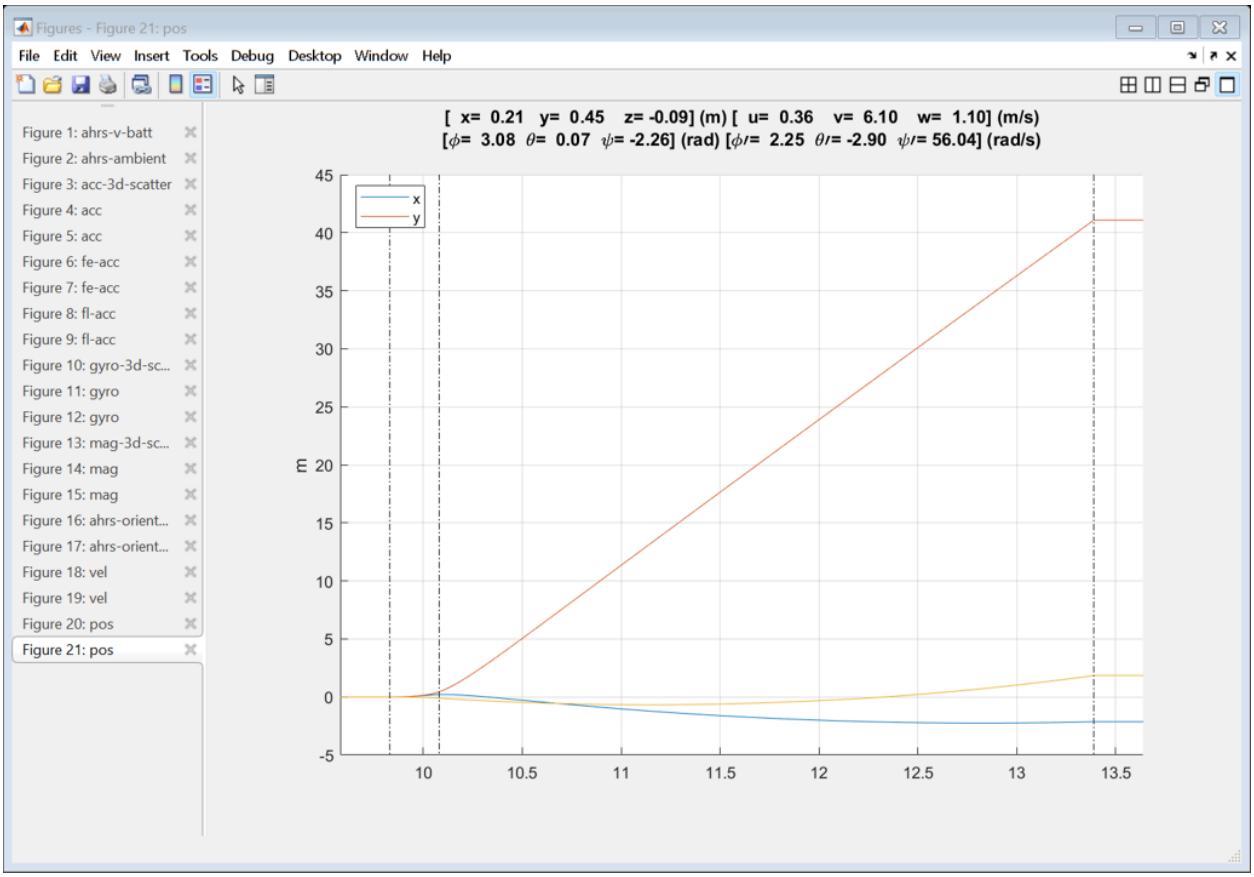

Figures - Figure 16: ahrs-orientation
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: mag-3d-sc...
Figure 14: mag
Figure 15: mag
Figure 16: ahrs-orient...
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
pitch
roll
deg
200
100
0
-100
-200
0
5
10
15
20
25
yaw
deg
200
100
0
-100
-200
0
5
10
15
20
25


Figures - Figure 17: ahrs-orientation
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: mag-3d-sc...
Figure 14: mag
Figure 15: mag
Figure 16: ahrs-orient...
Figure 17: ahrs-orient...
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
deg
pitch
roll
yaw
10
10.5
11
11.5
12
12.5
13
13.5


Figures - Figure 18: vel
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: mag-3d-sc...
Figure 14: mag
Figure 15: mag
Figure 16: ahrs-orient...
Figure 17: ahrs-orient...
Figure 18: vel
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
m/s
14
12
10
8
6
4
2
0
-2
0
5
10
15
20
25
u
v


Figures - Figure 19: vel
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: mag-3d-sc...
Figure 14: mag
Figure 15: mag
Figure 16: ahrs-orient...
Figure 17: ahrs-orient...
Figure 18: vel
Figure 19: vel
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
m/s
14
12
10
8
6
4
2
0
-2
10
10.5
11
11.5
12
12.5
13
13.5
u
v


Figures - Figure 20: pos
File Edit View Insert Tools Debug Desktop Window Help
Figure 1: ahrs-v-batt
Figure 2: ahrs-ambient
Figure 3: acc-3d-scatter
Figure 4: acc
Figure 5: acc
Figure 6: fe-acc
Figure 7: fe-acc
Figure 8: fl-acc
Figure 9: fl-acc
Figure 10: gyro-3d-sc...
Figure 11: gyro
Figure 12: gyro
Figure 13: mag-3d-sc...
Figure 14: mag
Figure 15: mag
Figure 16: ahrs-orient...
Figure 17: ahrs-orient...
Figure 18: vel
Figure 19: vel
Figure 20: pos
[x= 0.21 y= 0.45 z= -0.09] (m) [u= 0.36 v= 6.10 w= 1.10] (m/s)
[ϕ= 3.08 θ= 0.07 ψ= -2.26] (rad) [ϕ/= 2.25 θ/= -2.90 ψ/= 56.04] (rad/s)
m
x
y



available datalogs

fname = '2025-08-16-001-rb'; fname = '2025-08-16-002-rb'; fname = '2025-08-16-003-rf'; fname = '2025-08-16-004-rf'; fname = '2025-08-16-005-ambient'; fname = '2025-08-17-001-rb'; fname = '2025-08-17-002-rb'; fname = '2025-08-17-003-rf'; fname = '2025-08-17-004-rf'; fname = '2025-08-31-001-rb'; fname = '2025-08-31-002-rb'; fname = '2025-08-31-003-rf'; fname = '2025-08-31-004-rf'; fname = '2025-08-31-005-rh'; fname = '2025-08-31-006-rh';

work-in-progress

```
% fitYawDampingMinimal( tsc.Time(idx_launch:idx_impact),
 tsc.gyro_z.Data(idx_launch:idx_impact), disc.I(3,3), 0.999, 1e3);
% fitYawDamping( tsc.Time(idx_launch_end:idx_impact),
 tsc.gyro_z.Data(idx_launch_end:idx_impact), disc.I(3,3));
```

Published with MATLAB® R2021b