

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.212670477136, median 0.170715116696, std: 0.179881069084

Reprojection error (cam1): mean 0.212988568146, median 0.170619933898, std: 0.180737817589

Gyroscope error (imu0): mean 0.90600497919, median 0.67771799952, std: 0.819488454649

Accelerometer error (imu0): mean 1.55259205954, median 1.09182337235, std: 2.08657091909

Residuals

Reprojection error (cam0) [px]: mean 0.212670477136, median 0.170715116696, std: 0.179881069084

Reprojection error (cam1) [px]: mean 0.212988568146, median 0.170619933898, std: 0.180737817589

Gyroscope error (imu0) [rad/s]: mean 0.0338574060723, median 0.0253263216421, std: 0.030624283550

Accelerometer error (imu0) [m/s^2]: mean 0.0579116838208, median 0.0407250117888, std: 0.0778290955

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[-0.00407513 -0.99999052  0.00153372  0.00237912]
[-0.0060896 -0.00150888 -0.99998032 -0.01569267]
[ 0.99997315 -0.00408439 -0.00608339  0.00063251]
[ 0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[-0.00407513 -0.0060896  0.99997315 -0.00071836]
[-0.99999052 -0.00150888 -0.00408439  0.00235801]
[ 0.00153372 -0.99998032 -0.00608339 -0.01569216]
[ 0.          0.          0.          1.        ]]
```

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)

-0.0723980514218

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[ 0.      0.      0.      1.      ]]
```

T_ic: (cam1 to imu0):

```
[-0.00256499 -0.00633838  0.99997662 -0.0008448 ]  
[-0.99999516 -0.00174356 -0.00257608 -0.04728805]  
[ 0.00175985 -0.99997839 -0.00633388 -0.01556804]  
[ 0.      0.      0.      1.      ]]
```

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)

```
-0.0724074904303
```

Baselines:

```
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```

Baseline (cam0 to cam1):

```
[ 0.99999883 -0.00023532  0.00150875 -0.04964636]  
[ 0.00023569  0.99999994 -0.00024783  0.00003675]  
[-0.00150869  0.00024818  0.99999883 -0.00000067]  
[ 0.      0.      0.      1.      ]]
```

baseline norm: 0.0496463744464 [m]

Gravity vector in target coords: [m/s^2]

```
[ 0.19106123 -9.80450817  0.05948105]
```

Calibration configuration

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cam0

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Camera model: pinhole

Focal length: [391.3511089450101, 390.748509834967]

Principal point: [329.16606651890316, 244.17638440693966]

Distortion model: radtan

Distortion coefficients: [0.009830002251518099, 0.0005126791724795964, 0.0023477953254712443, 0.0

Type: aprilgrid

Tags:

Spacing 0.02610294 [m]

cam1

=====
Camera model: pinhole

Focal length: [391.26466007706006, 390.5874563189364]

Principal point: [328.52450542863005, 244.34519445372817]

Distortion model: radtan

Distortion coefficients: [0.01036359654735661, -0.0008188685987084828, 0.0023827025423422948, 0.0000000000000000, 0.0000000000000000]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.0878 [m]

Spacing 0.02610294 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 400.0

Accelerometer:

 Noise density: 0.001865

 Noise density (discrete): 0.0373

 Random walk: 0.0002

Gyroscope:

 Noise density: 0.0018685

 Noise density (discrete): 0.03737

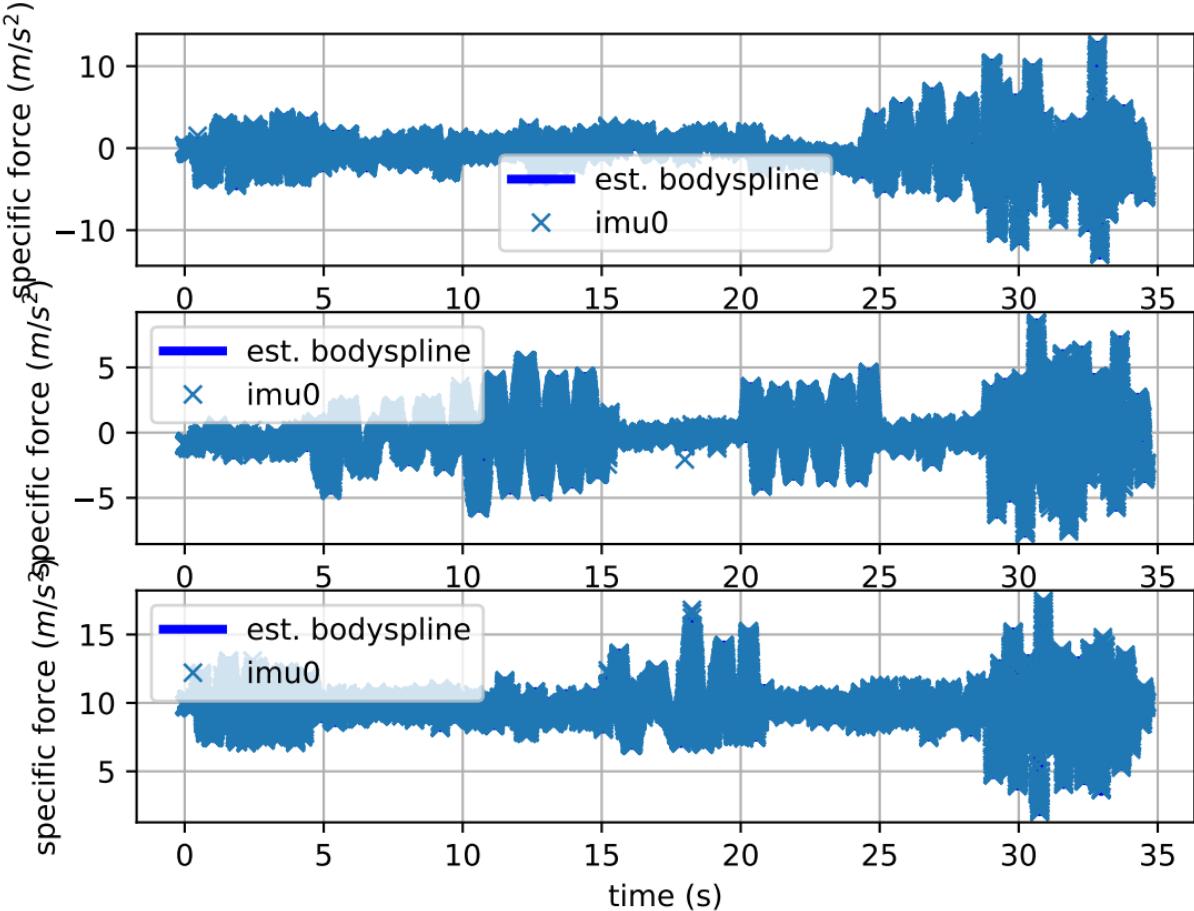
 Random walk: 4e-06

T_i_b

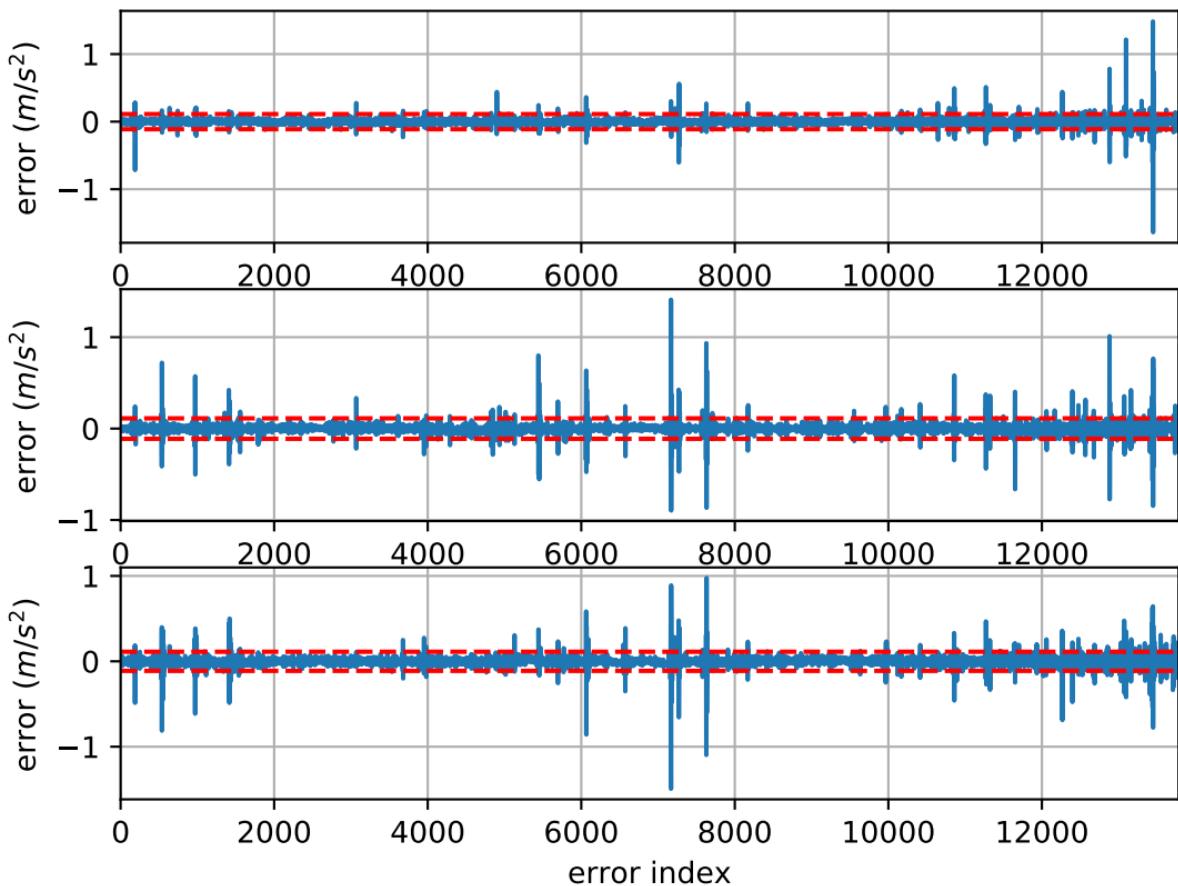
[[1. 0. 0. 0.]

 [0. 1. 0. 0.]

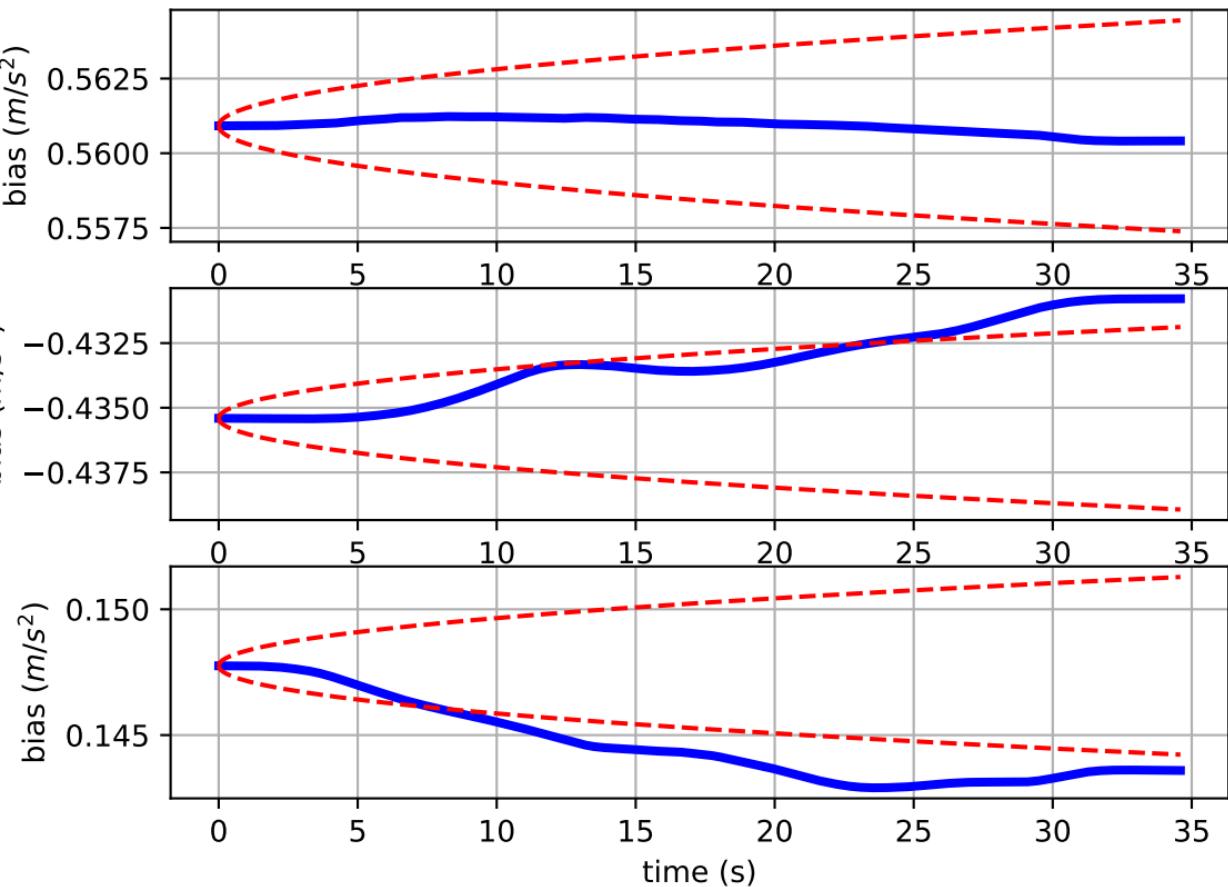
Comparison of predicted and measured specific force (imu0 frame)



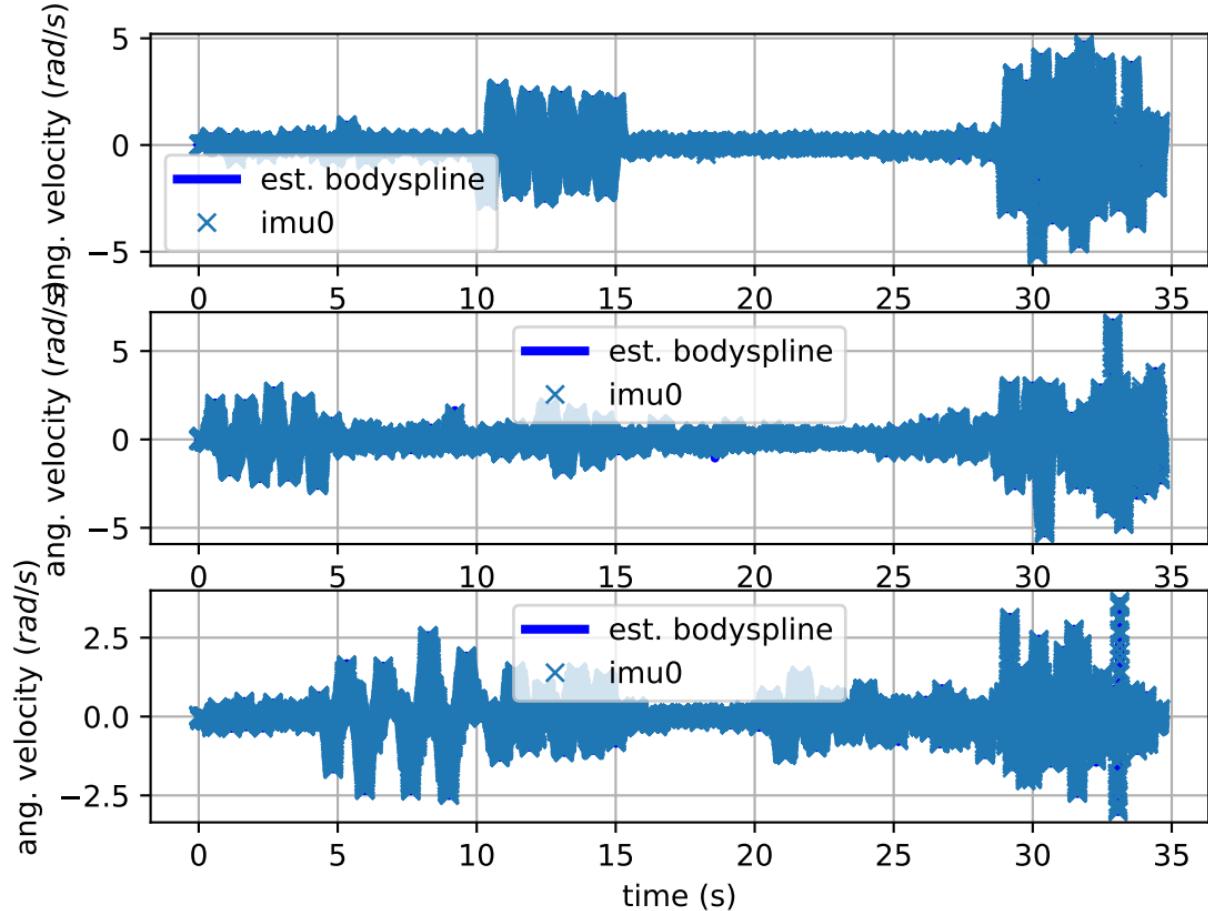
imu0: acceleration error



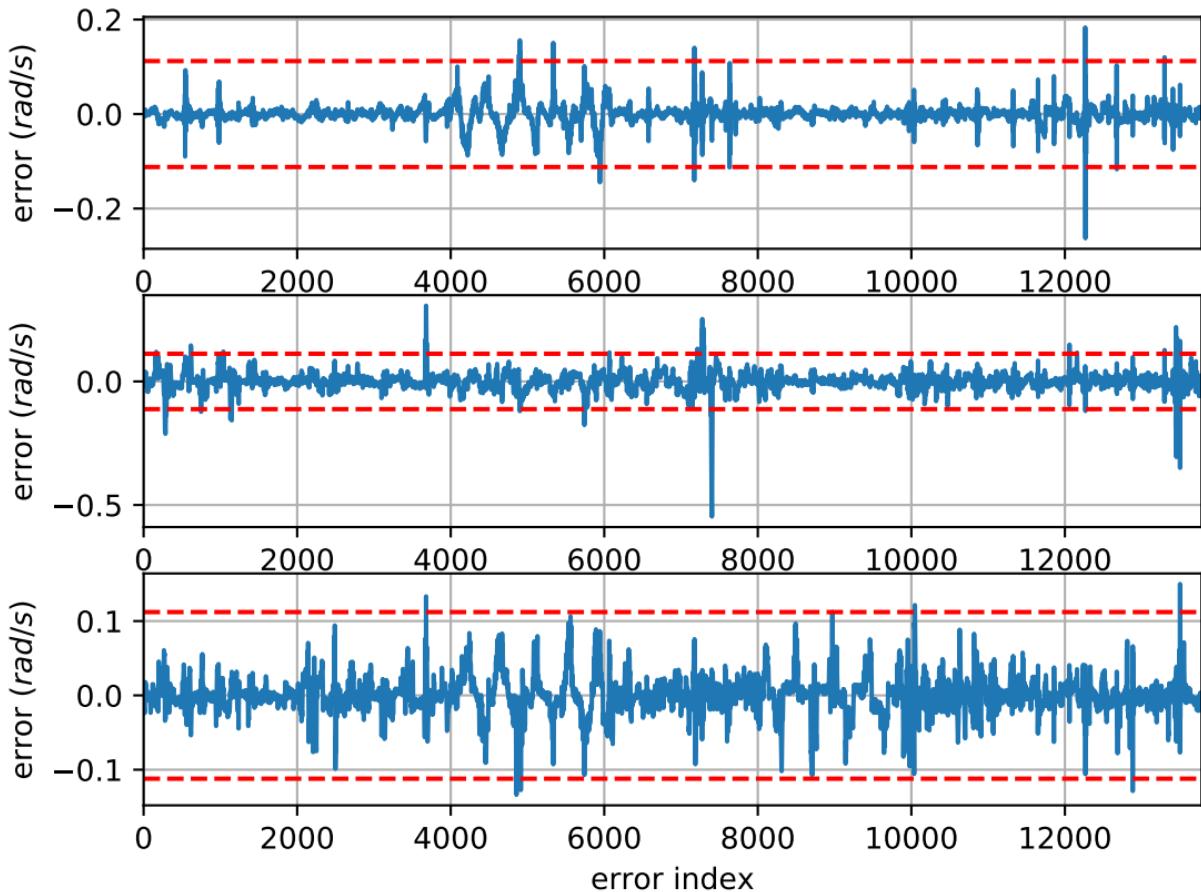
imu0: estimated accelerometer bias (imu frame)



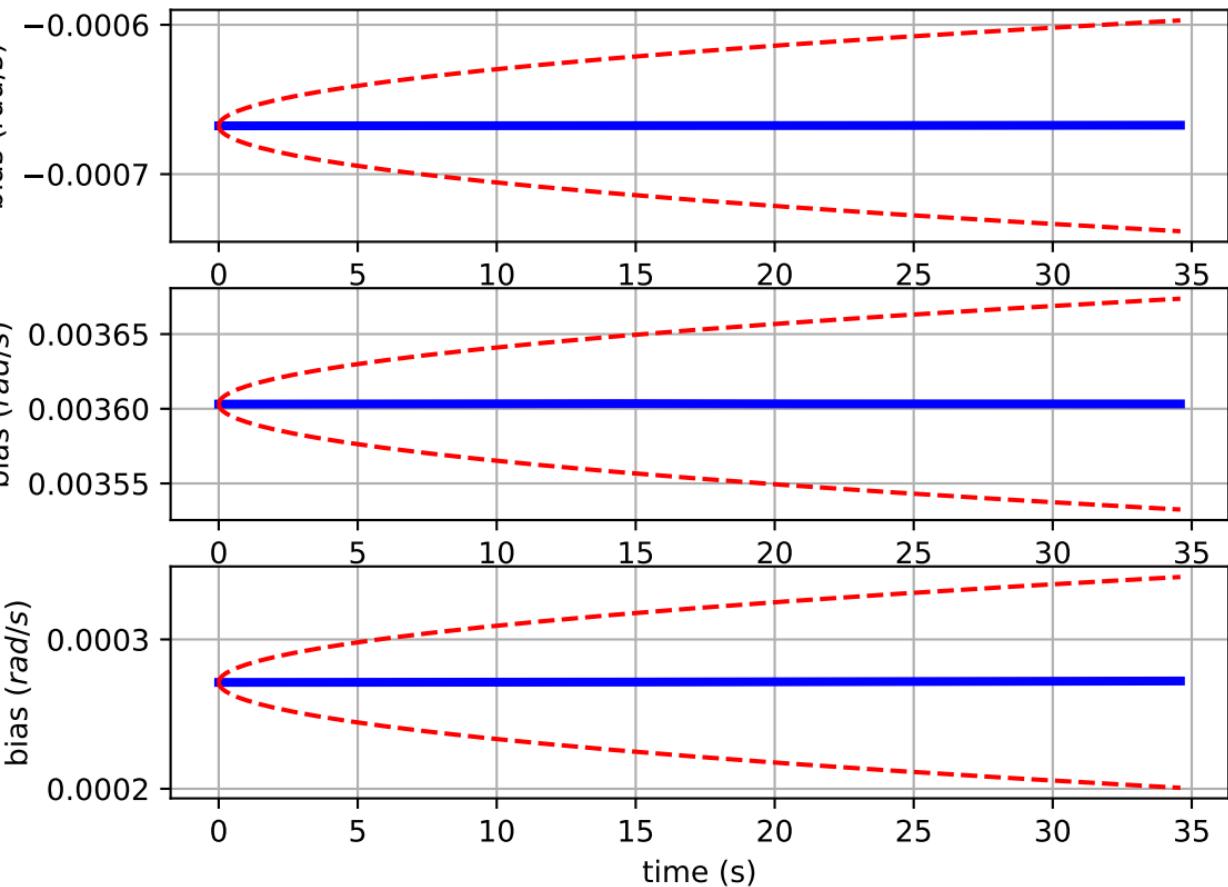
Comparison of predicted and measured angular velocities (body frame)



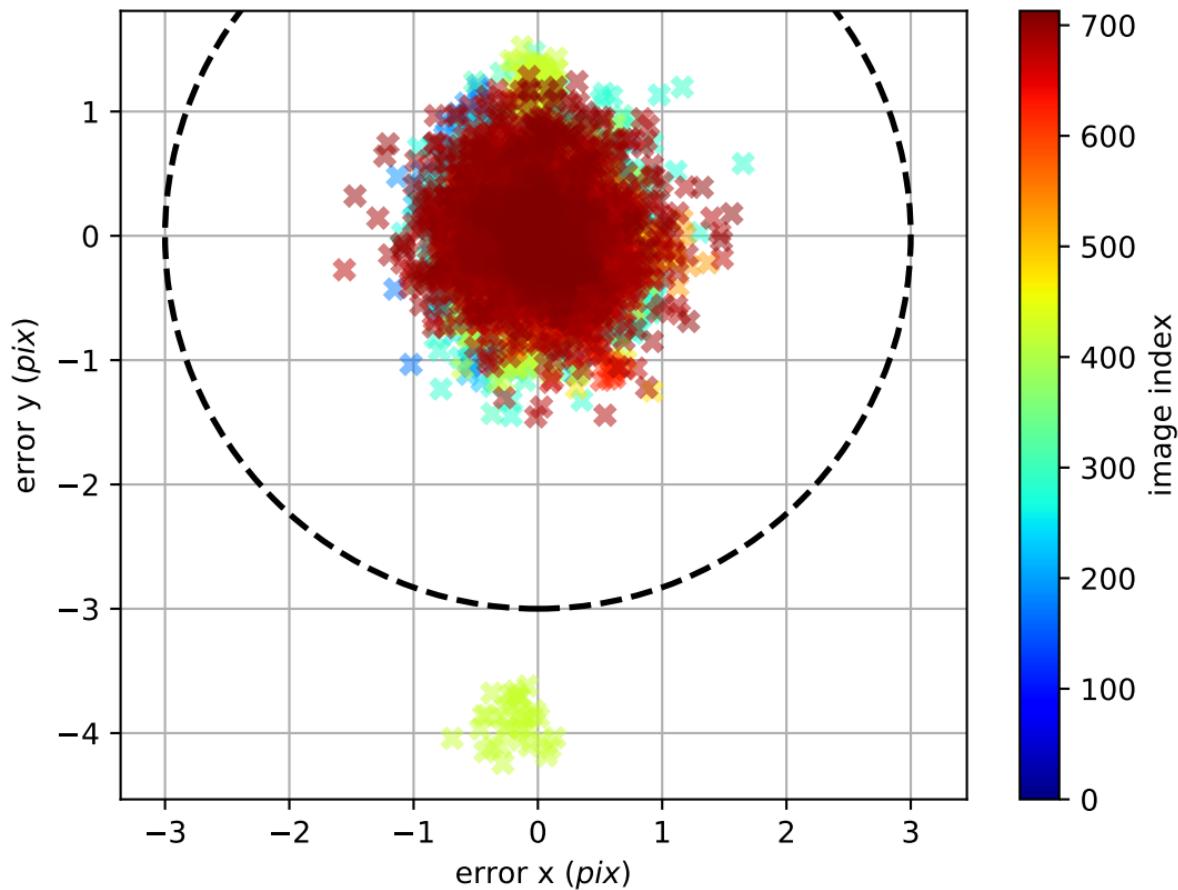
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

