

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.221062607876, median 0.208282290734, std: 0.122921048059
Reprojection error (cam1): mean 0.234957590378, median 0.224261484639, std: 0.14948194851
Gyroscope error (imu0): mean 0.669068950357, median 0.198197762886, std: 1.76180574811
Accelerometer error (imu0): mean 0.358362424902, median 0.203182565818, std: 0.538972356545

Residuals

Reprojection error (cam0) [px]: mean 0.221062607876, median 0.208282290734, std: 0.122921048059
Reprojection error (cam1) [px]: mean 0.234957590378, median 0.224261484639, std: 0.14948194851
Gyroscope error (imu0) [rad/s]: mean 0.0125115893717, median 0.00370629816597, std: 0.03294576748
Accelerometer error (imu0) [m/s^2]: mean 0.0666554110319, median 0.0377919572421, std: 0.100248858

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ -0.01937846  0.99959341 -0.02091607  0.00350013]
 [  0.99394339  0.01699712 -0.10857092 -0.00196101]
 [ -0.10817126 -0.02289333 -0.99386864 -0.01414518]
 [  0.          0.          0.          1.          ]]
```

T_ic: (cam0 to imu0):

```
[[ -0.01937846  0.99394339 -0.10817126  0.00048686]
 [  0.99959341  0.01699712 -0.02289333 -0.0037892 ]
 [ -0.02091607 -0.10857092 -0.99386864 -0.01419815]
 [  0.          0.          0.          1.          ]]
```

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
0.0208703200137

Transformation (cam1):

T_ci: (imu0 to cam1):

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

T_ic: (cam1 to imu0):

```
[[-0.0056823  0.99466283 -0.10302215 -0.00026297]  
[ 0.99992955  0.00457804 -0.0109519  0.07145578]  
[-0.01042181 -0.10307712 -0.99461877 -0.01467009]  
[ 0.      0.      0.      1.    ]]
```

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

0.0208579570412

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99985109  0.01247955 -0.01191915 -0.07524886]  
[-0.01254288  0.99990753 -0.00525362  0.0003527 ]  
[ 0.01185249  0.00540234  0.99991516  0.00027742]  
[ 0.      0.      0.      1.    ]]
```

baseline norm: 0.075250202426 [m]

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

```
[ 1.93221576 -9.61254121  0.18443583]
```

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [402.6924003215458, 402.17096238661736]

Principal point: [322.5035234860196, 205.73428302958067]

Distortion model: radtan

Distortion coefficients: [0.024928081869911203, -0.07012745556025037, 0.0016001560423120524, 0.001

Type: aprilgrid

Tags:

Spacing 0.0066 [m]

cam1

Camera model: pinhole

Focal length: [405.2757307734914, 404.5312459975442]

Principal point: [338.0068814384687, 200.053362441959]

Distortion model: radtan

Distortion coefficients: [0.0252658811574496, -0.07111700969440314, 0.0006870932002197671, 0.00119

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.022 [m]

Spacing 0.0066 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 100.0

Accelerometer:

Noise density: 0.0186

Noise density (discrete): 0.186

Random walk: 0.00433

Gyroscope:

Noise density: 0.00187

Noise density (discrete): 0.0187

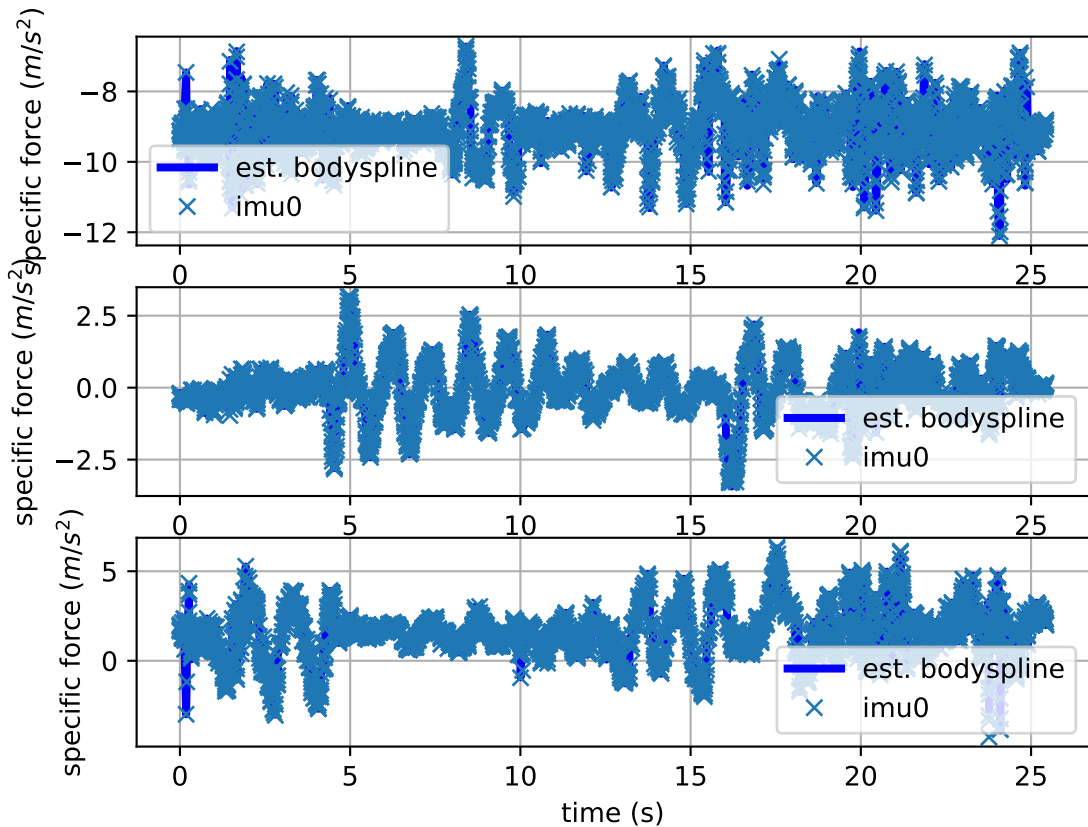
Random walk: 0.000266

T_i_b

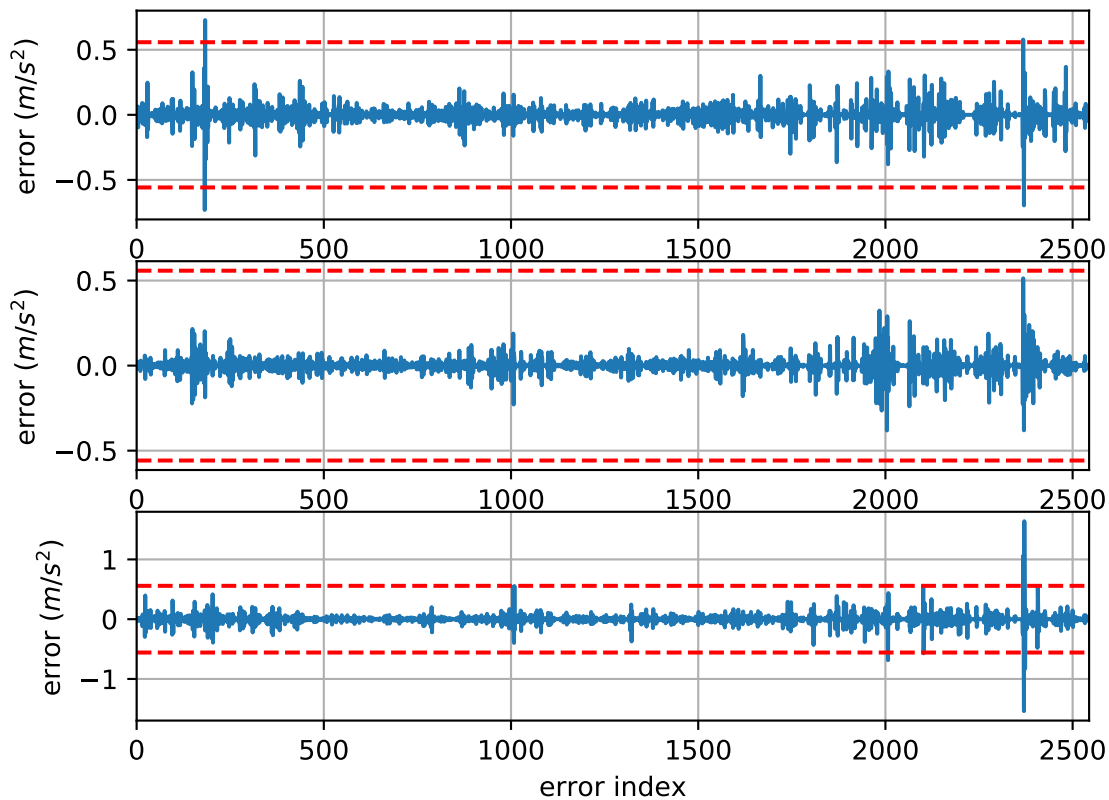
[[1. 0. 0. 0.]

[0. 1. 0. 0.]

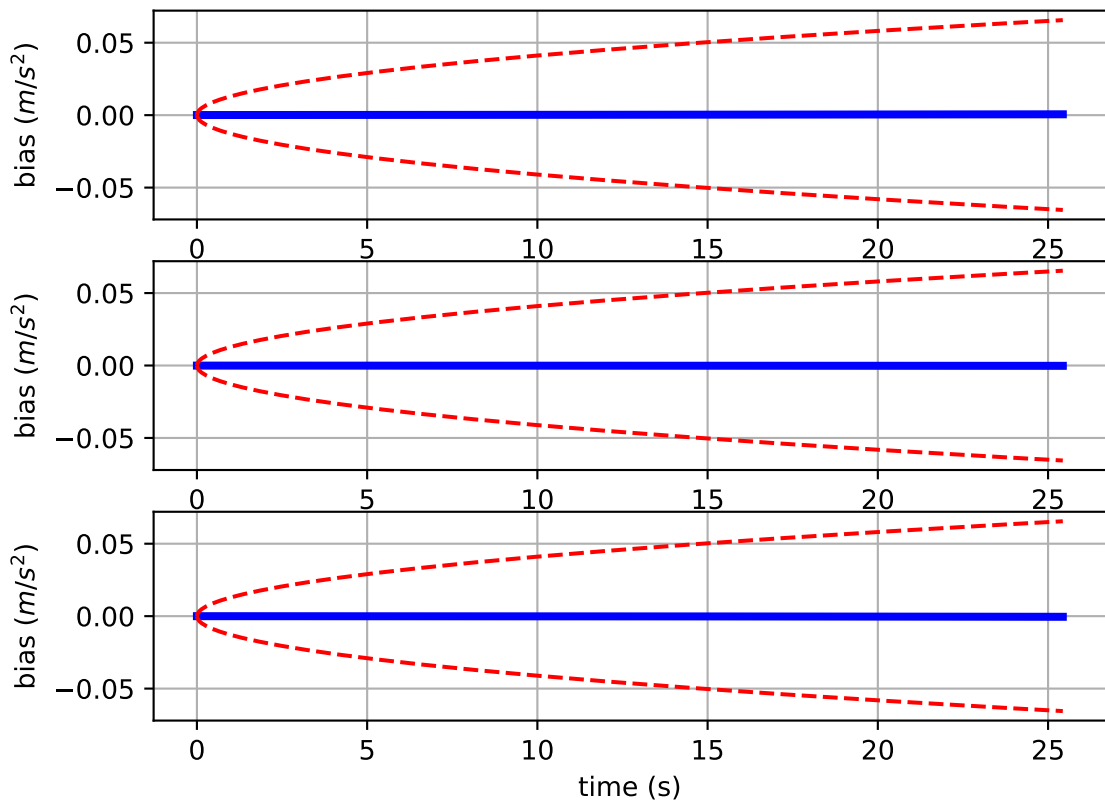
Comparison of predicted and measured specific force (imu0 frame)



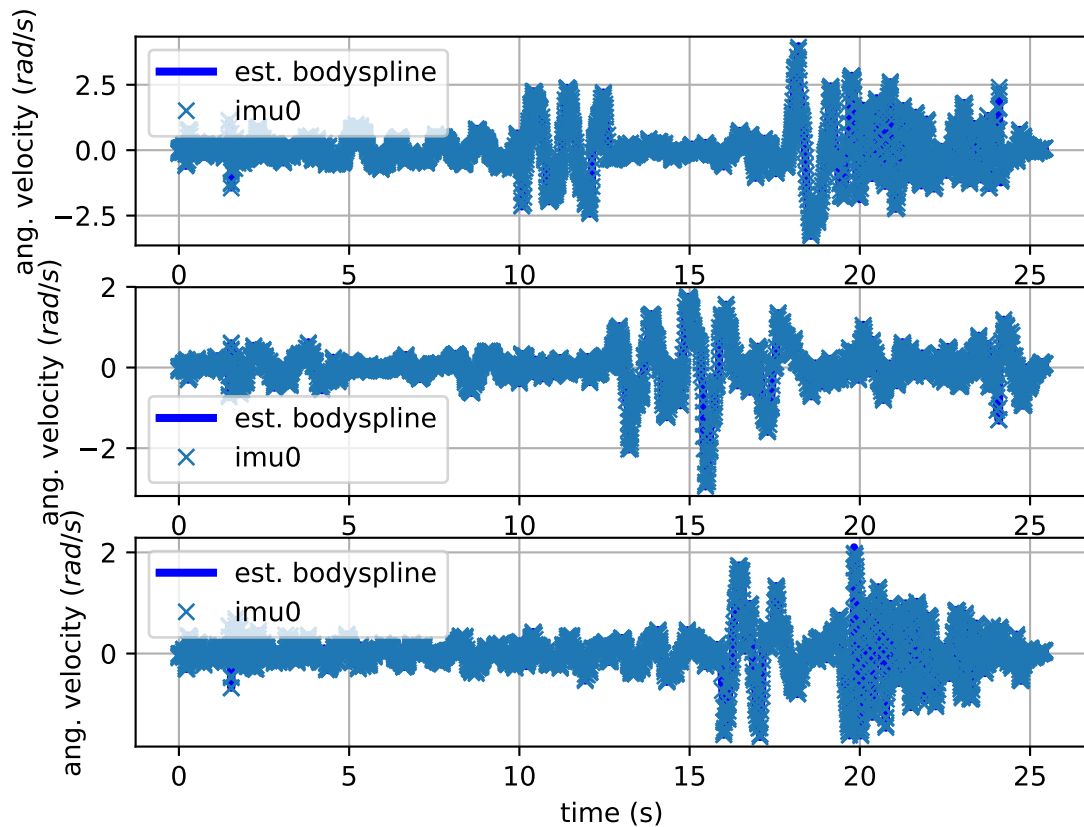
imu0: acceleration error



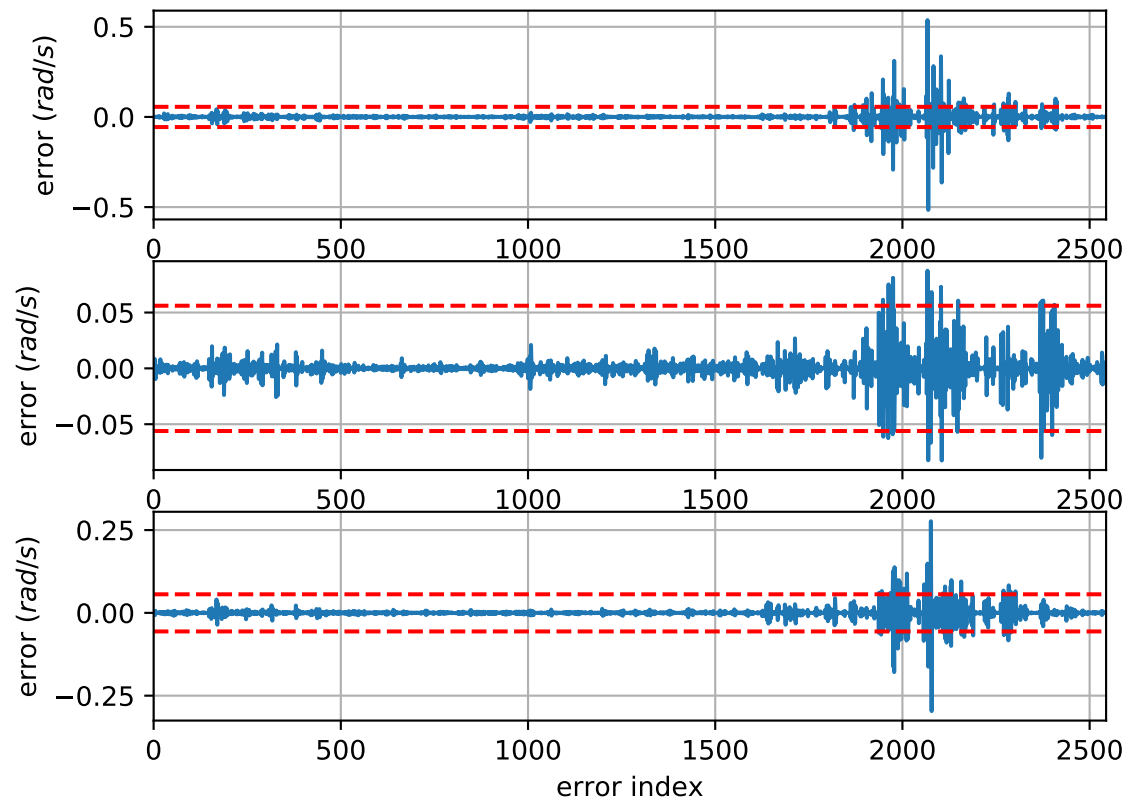
imu0: estimated accelerometer bias (imu frame)



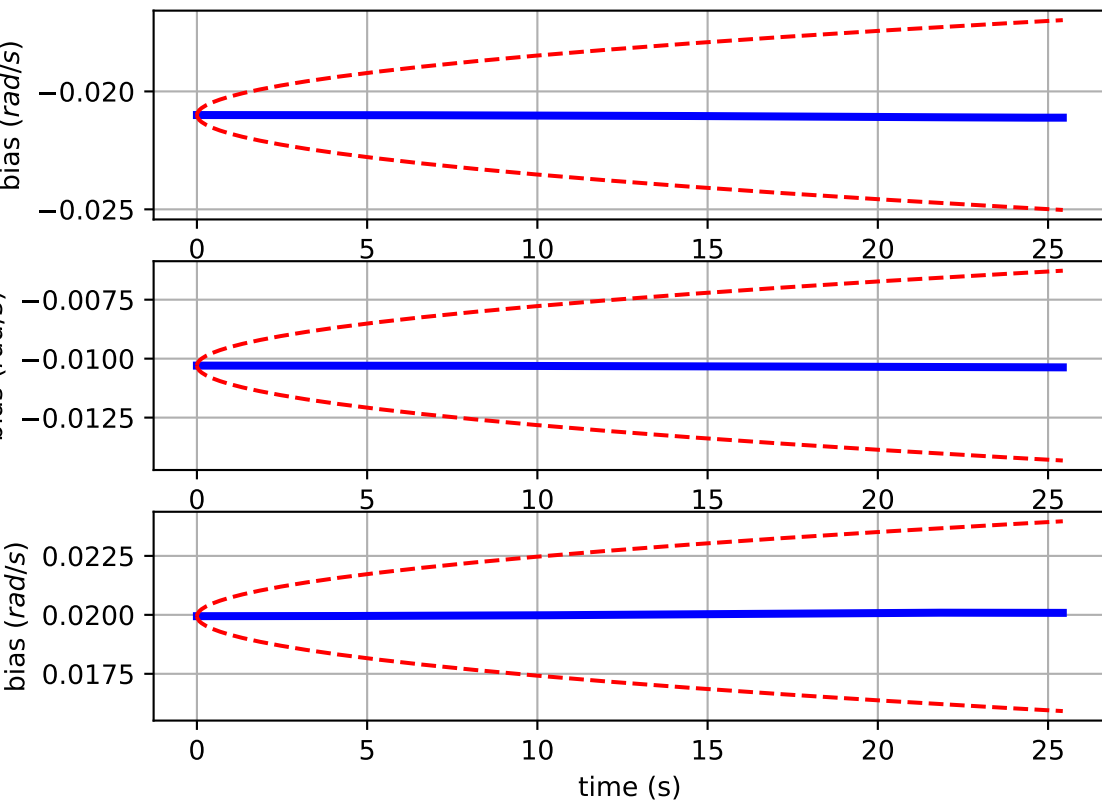
Comparison of predicted and measured angular velocities (body frame)



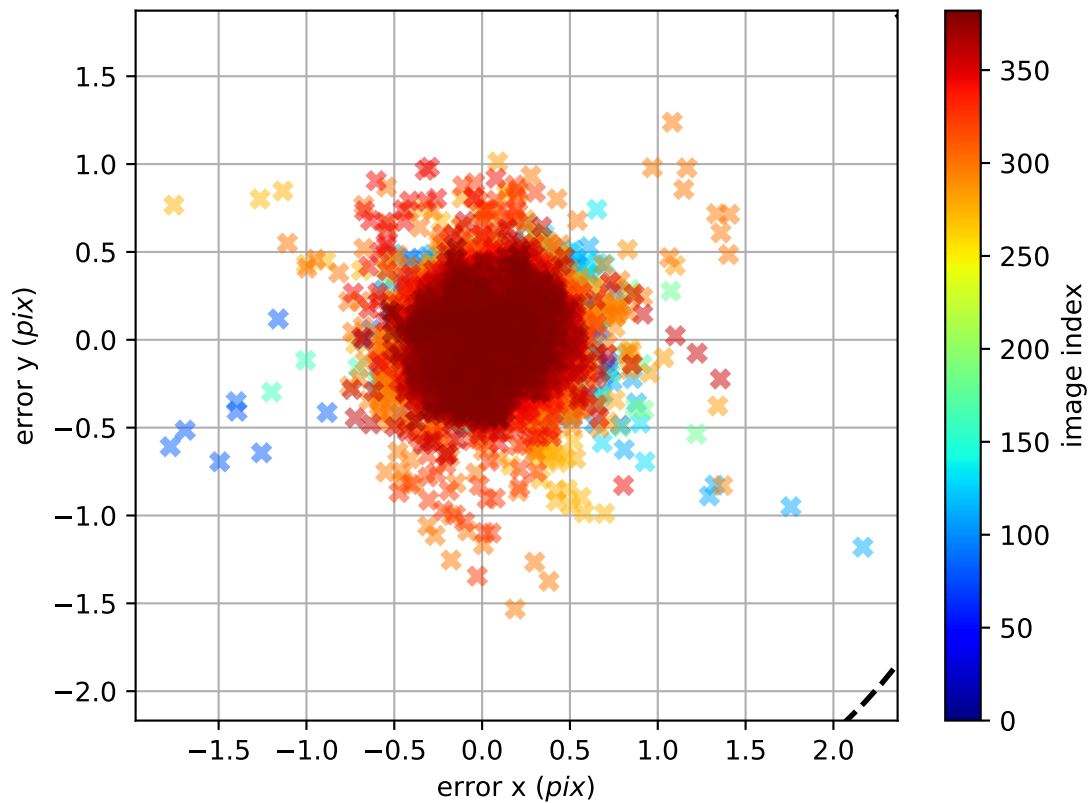
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

