

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 1.251567827233479, median 0.9454055442493778, std: 1.0345600798

Gyroscope error (imu0): mean 7.88277944478615e-07, median 3.1813256529737486e-08, std: 1.95607

Accelerometer error (imu0): mean 7.221013730513071e-06, median 7.708196953959733e-07, std: 0.0001

### Residuals

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Reprojection error (cam0) [px]: mean 1.251567827233479, median 0.9454055442493778, std: 1.0345600

Gyroscope error (imu0) [rad/s]: mean 4.384008080504026e-09, median 1.7692943798619787e-10, std: 1

Accelerometer error (imu0) [m/s^2]: mean 7.989854705047954e-07, median 8.528909651533861e-08, std:

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

```
[[ 0.12100125  0.99122432 -0.05322629 -0.01067866]
 [ 0.992601   -0.1202755  0.0166452  -0.00708732]
 [ 0.01009731 -0.05484656 -0.99844374  0.0036961 ]
 [ 0.         0.         0.         1.         ]]
```

T\_ic: (cam0 to imu0):

```
[[ 0.12100125  0.992601  0.01009731  0.00828969]
 [ 0.99122432 -0.1202755 -0.05484656  0.00993524]
 [-0.05322629  0.0166452 -0.99844374  0.00323993]
 [ 0.         0.         0.         1.         ]]
```

timeshift cam0 to imu0: [s] (t\_imu = t\_cam + shift)  
-0.16407895692954497

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

[-1.58107945 8.96972404 -3.63492247]

### Calibration configuration

-----  
Camera model: omni  
Focal length: [5388.541168351158, 5476.543796744285]  
Principal point: [679.228880887539, 319.915552894852]  
Omni xi: 3.8561555833141883  
Distortion model: radtan  
Distortion coefficients: [-1.2855595646432112, 50.51919240037724, 0.09758934062755266, 0.018636175  
Type: aprilgrid  
Tags:  
 Rows: 6  
 Cols: 6  
 Size: 0.31 [m]  
 Spacing 0.093 [m]

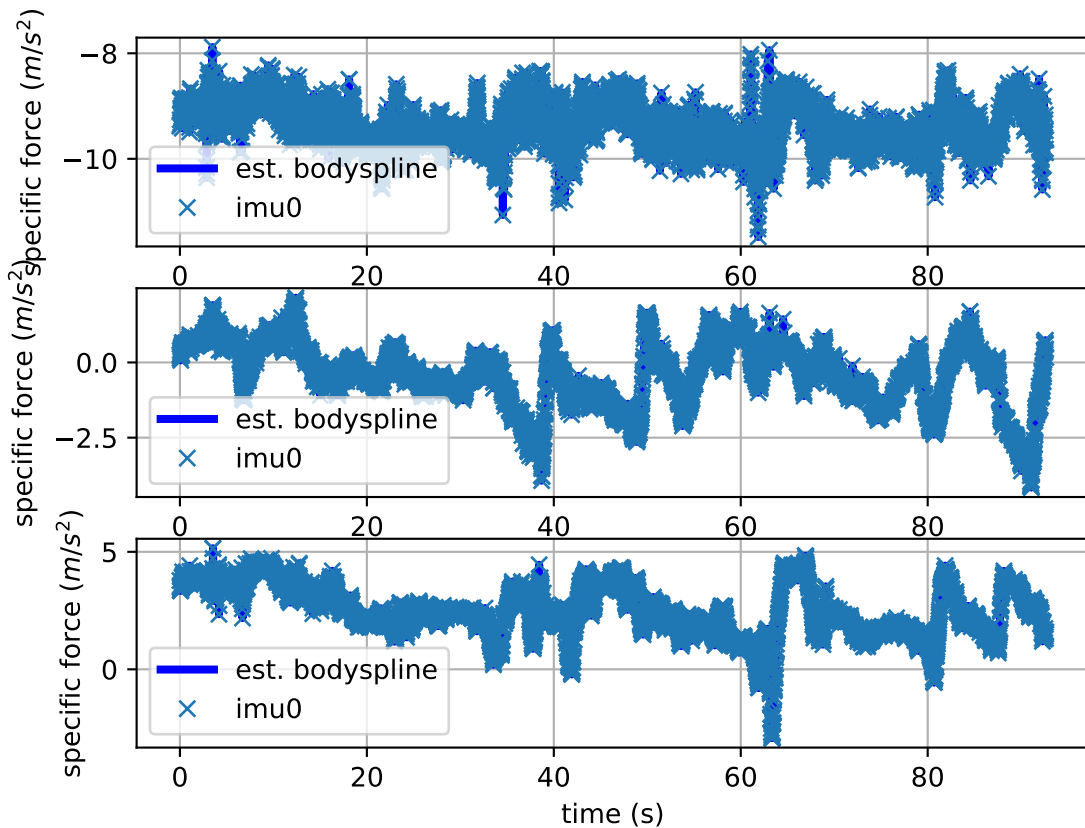
#### IMU configuration

##### =====

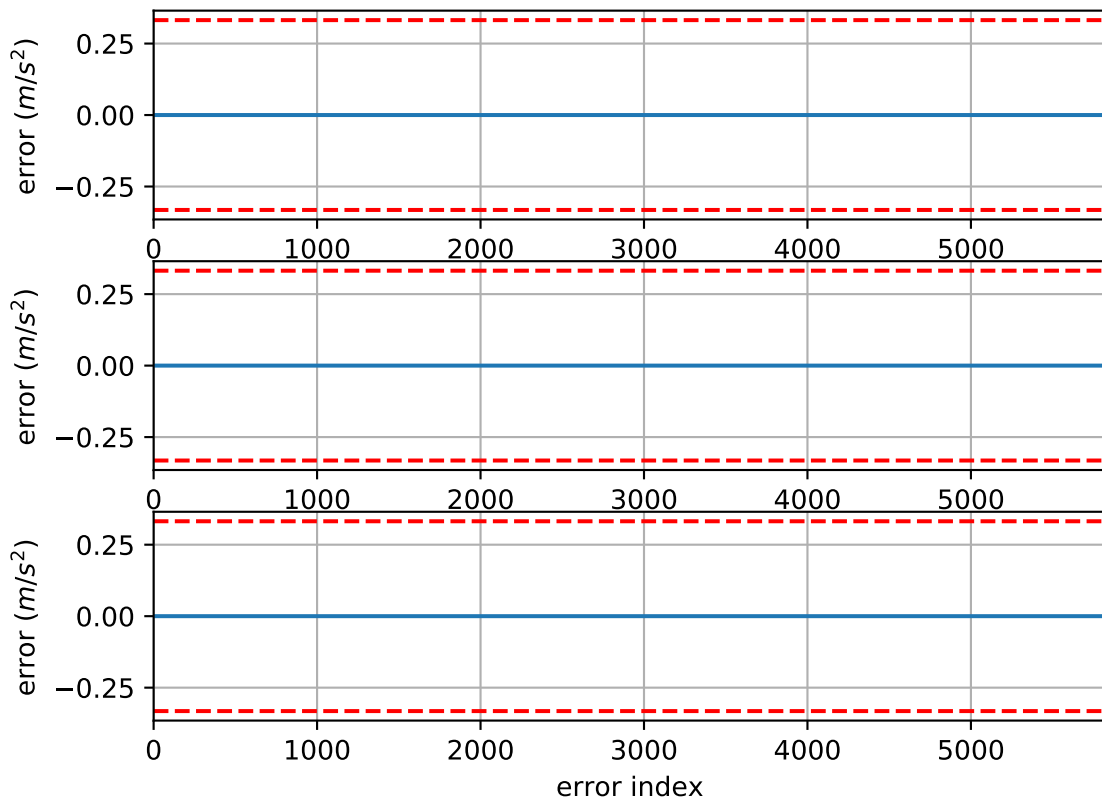
##### IMU0:

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Model: calibrated  
Update rate: 100.0  
Accelerometer:  
 Noise density: 0.01106472720206316  
 Noise density (discrete): 0.11064727202063158  
 Random walk: 0.0004043671067197022  
Gyroscope:  
 Noise density: 0.0005561500370790801  
 Noise density (discrete): 0.0055615003707908004  
 Random walk: 2.1248567802952673e-05  
T\_ib (imu0 to imu0)  
 [[1. 0. 0. 0.]  
 [0. 1. 0. 0.]  
 [0. 0. 1. 0.]  
 [0. 0. 0. 1.]]  
time offset with respect to IMU0: 0.0 [s]

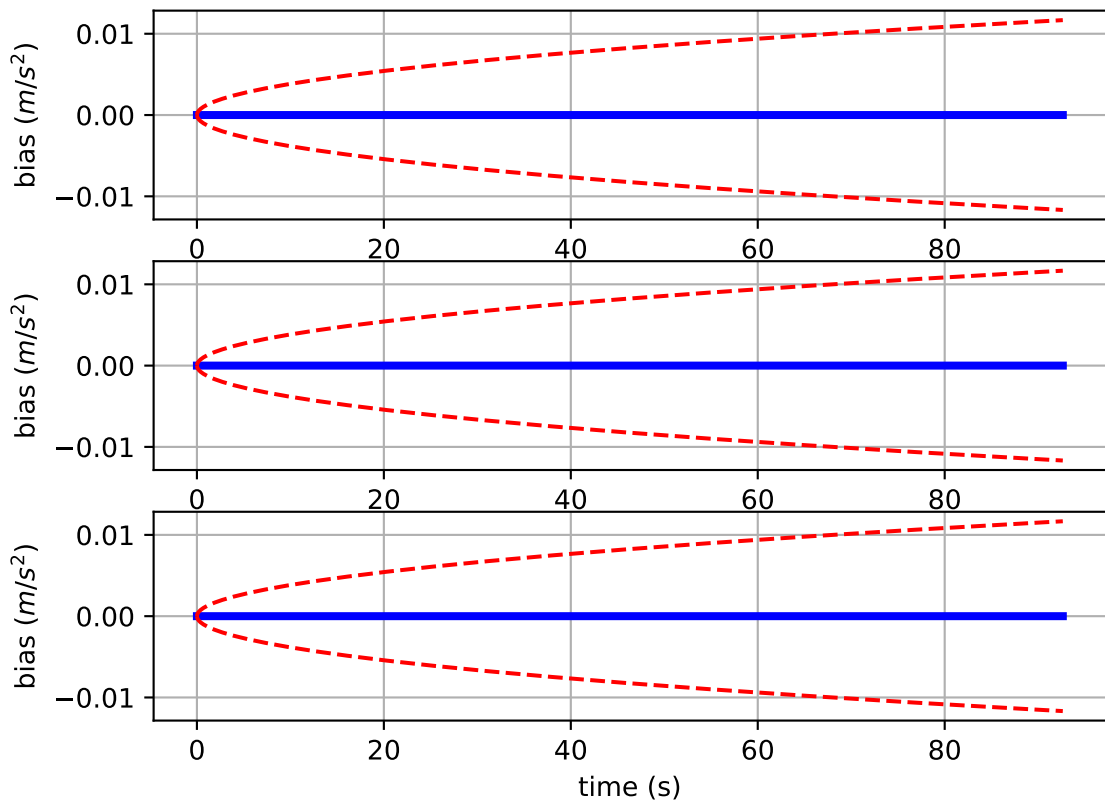
Comparison of predicted and measured specific force (imu0 frame)



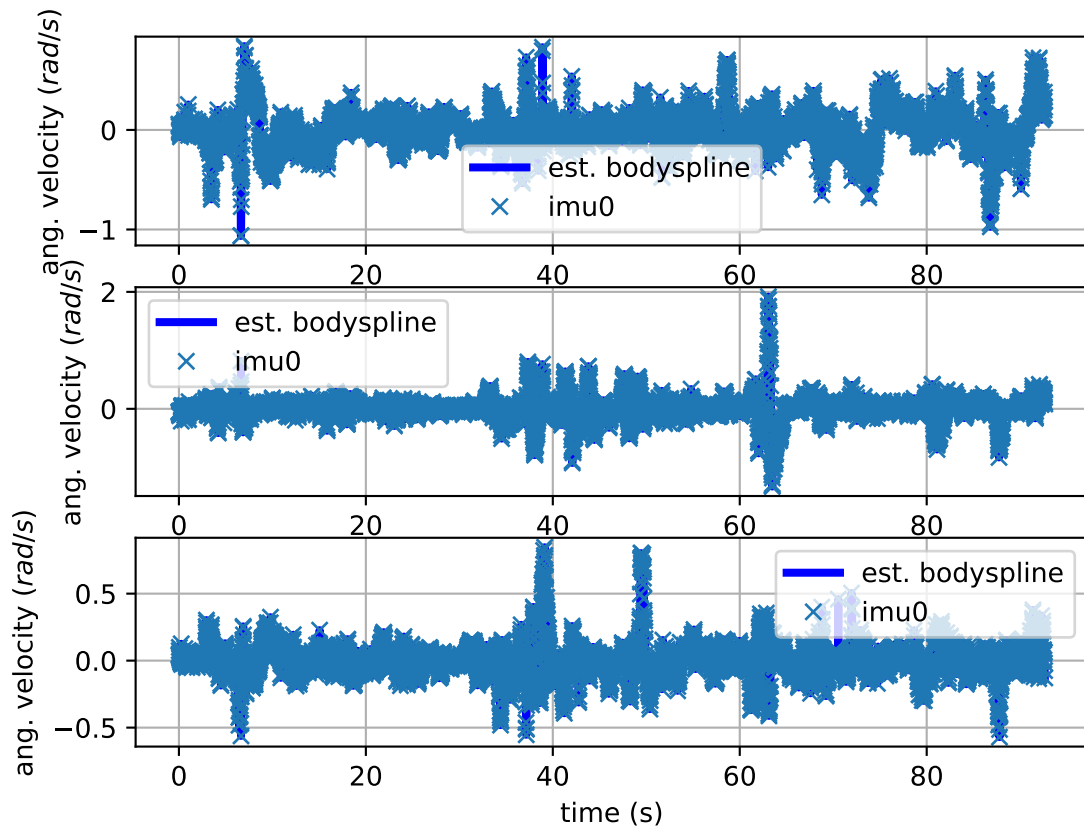
imu0: acceleration error



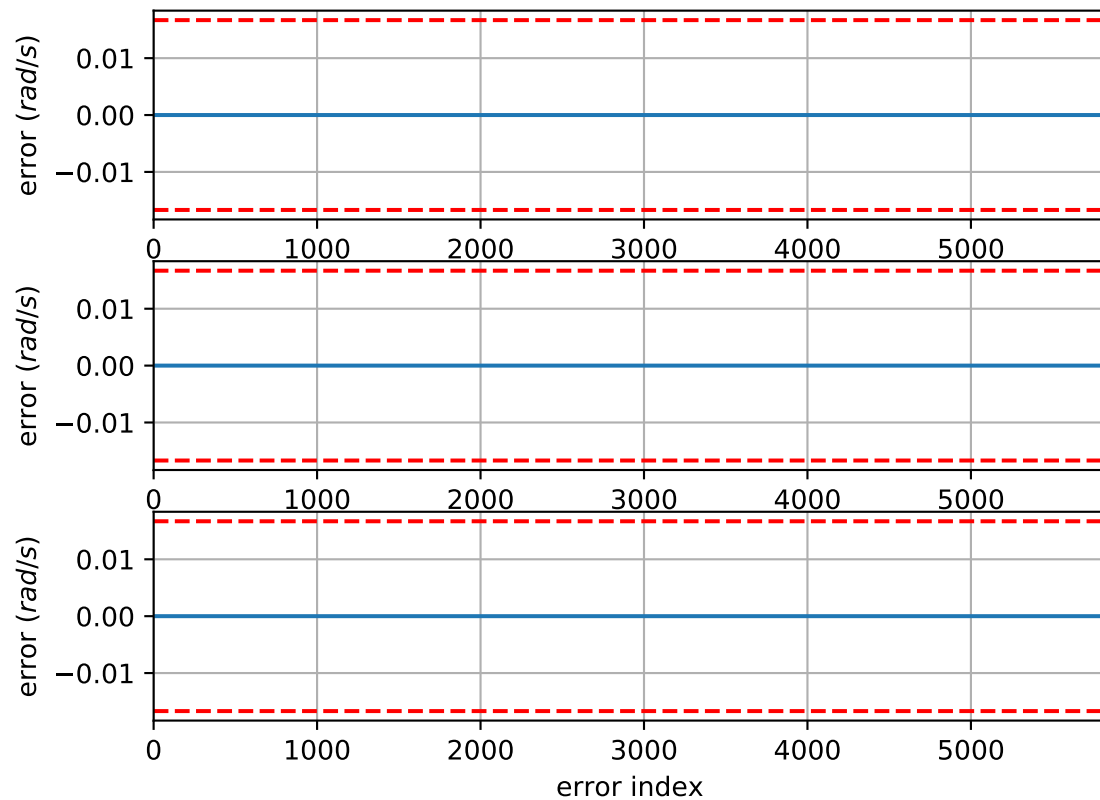
imu0: estimated accelerometer bias (imu frame)



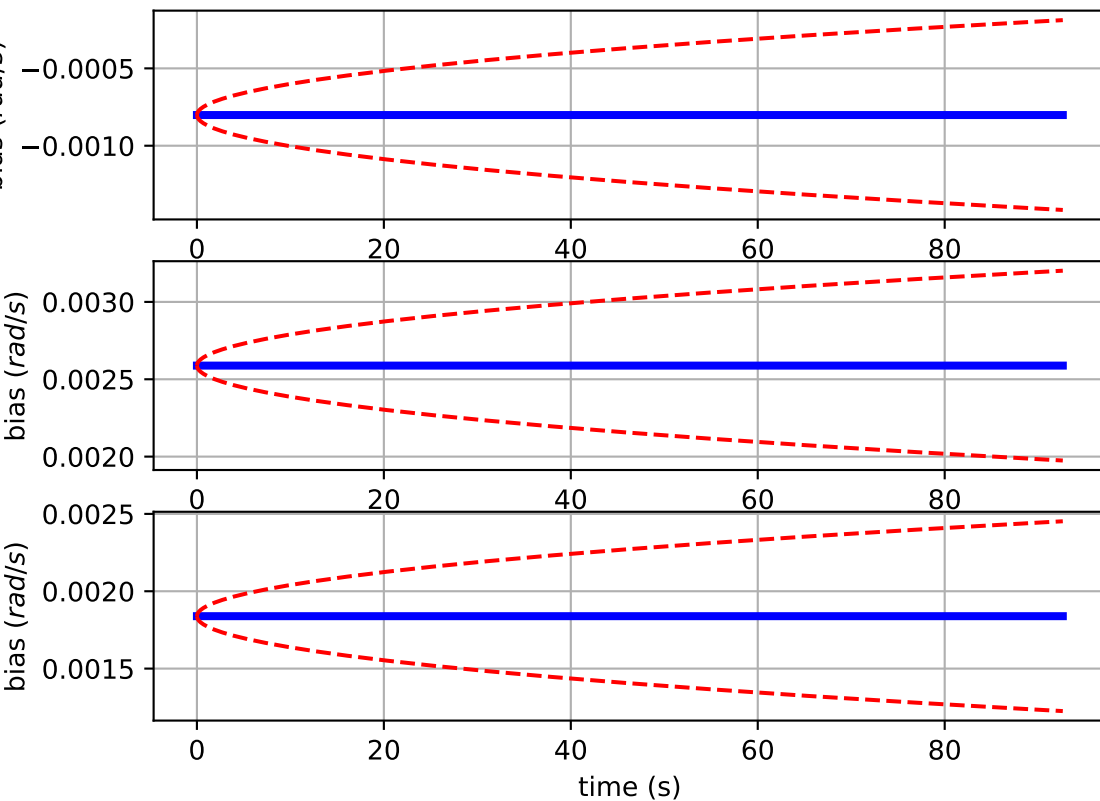
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)





cam0: reprojection errors

