

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 0.2501017272288519, median 0.20435315907673826, std: 0.23580107694945515

Gyroscope error (imu0): mean 0.4809681975749314, median 0.38047904428295, std: 0.519651119200483

Accelerometer error (imu0): mean 0.37301568213336955, median 0.2775017337619058, std: 0.47576498837658127

### Residuals

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Reprojection error (cam0) [px]: mean 0.2501017272288519, median 0.20435315907673826, std: 0.23580107694945515

Gyroscope error (imu0) [rad/s]: mean 0.002049620731268997, median 0.0016213914784963632, std: 0.0022144659715770784

Accelerometer error (imu0) [m/s^2]: mean 0.07462825354087042, median 0.05551903240842856, std: 0.09518503344248673

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

```
[[-0.50327608 -0.86410995  0.0052141 -0.01777097]
 [-0.0036913 -0.00388409 -0.99998564 -0.03493967]
 [ 0.8641178 -0.5032881 -0.00123492 -0.07539552]
 [ 0.          0.          1.          ]]
```

T\_ic: (cam0 to imu0):

```
[[-0.50327608 -0.0036913  0.8641178  0.05607793]
 [-0.86410995 -0.00388409 -0.5032881 -0.05343744]
 [ 0.0052141 -0.99998564 -0.00123492 -0.03493962]
 [ 0.          0.          1.          ]]
```

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

-0.006256523372096739

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

```
[ 0.03177853 -9.80649796 -0.0032784 ]
```

## Calibration configuration

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cam0

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Camera model: pinhole

Focal length: [394.03538004134475, 393.7334645711938]

Principal point: [321.36647139265347, 242.3425205876215]

Distortion model: radtan

Distortion coefficients: [-0.3384351805732969, 0.10202462978420083, -0.00021664571567149408,  
0.00014816136191386992]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.088 [m]

Spacing 0.026399999999999996 [m]

## IMU configuration

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IMU0:

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Model: calibrated

Update rate: 100

Accelerometer:

Noise density: 0.02000673352767714

Noise density (discrete): 0.2000673352767714

Random walk: 0.001224627431466927

Gyroscope:

Noise density: 0.0004261447516911305

Noise density (discrete): 0.004261447516911304

Random walk: 2.14534407581717e-05

T\_ib (imu0 to imu0)

[[-1. 0. 0. 0.]

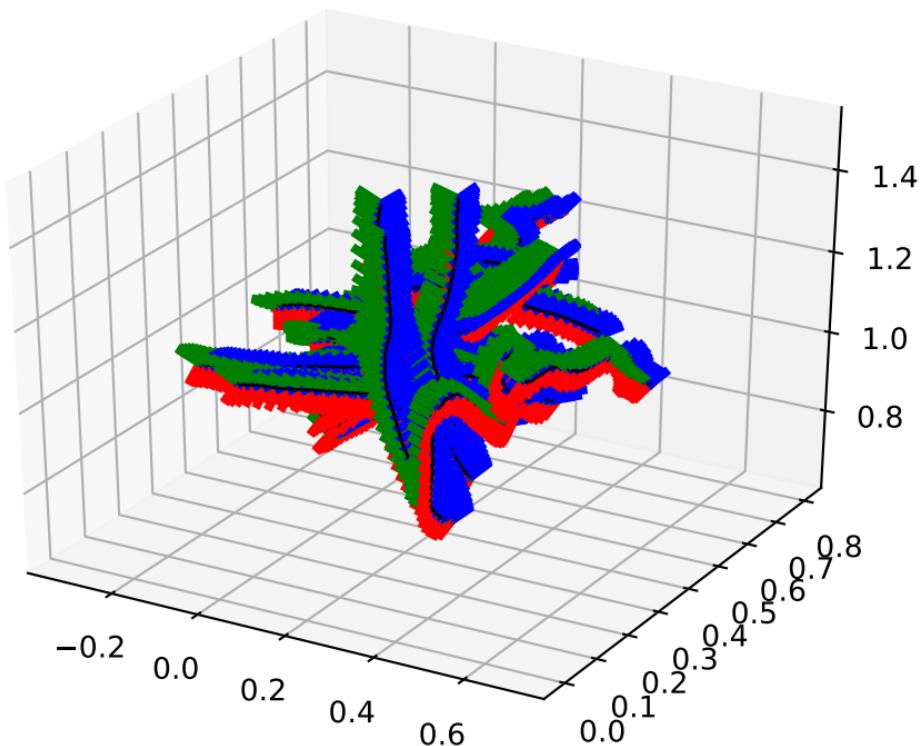
[0. 1. 0. 0.]

[0. 0. 1. 0.]

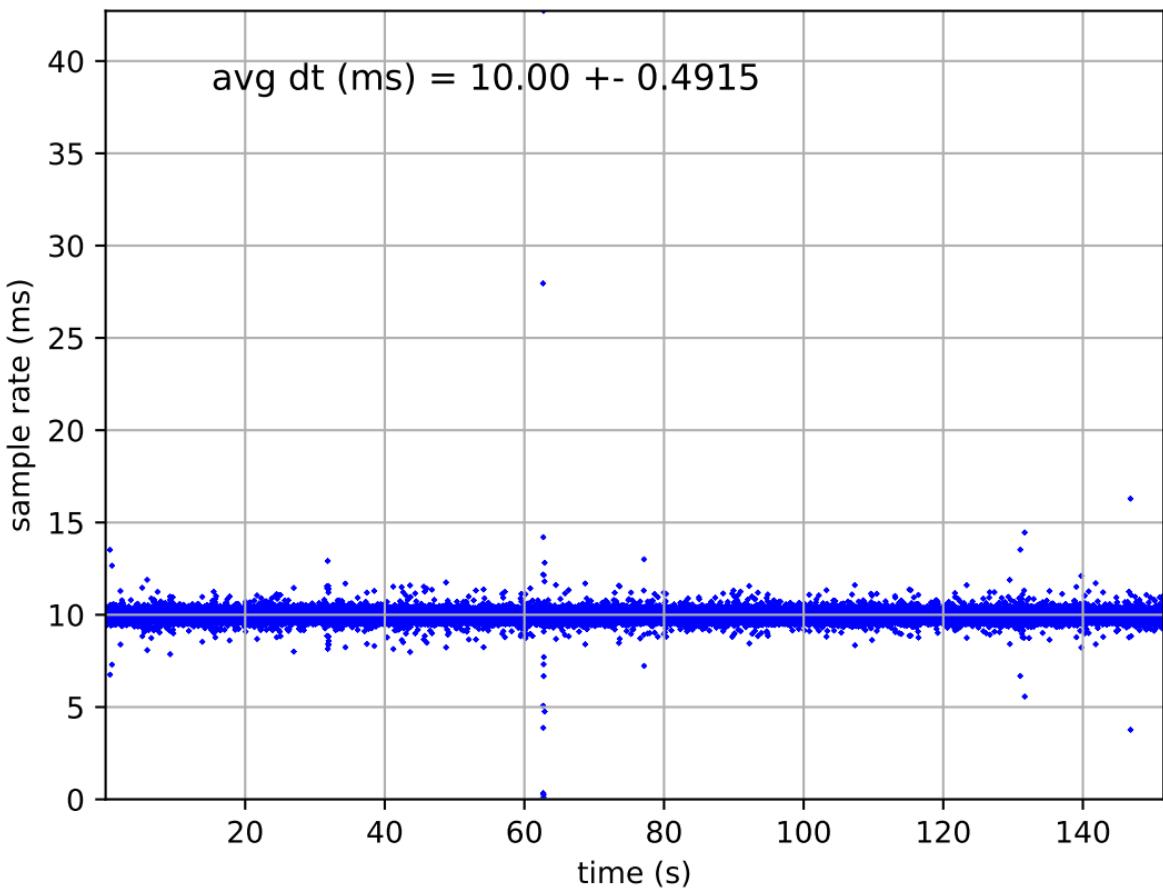
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

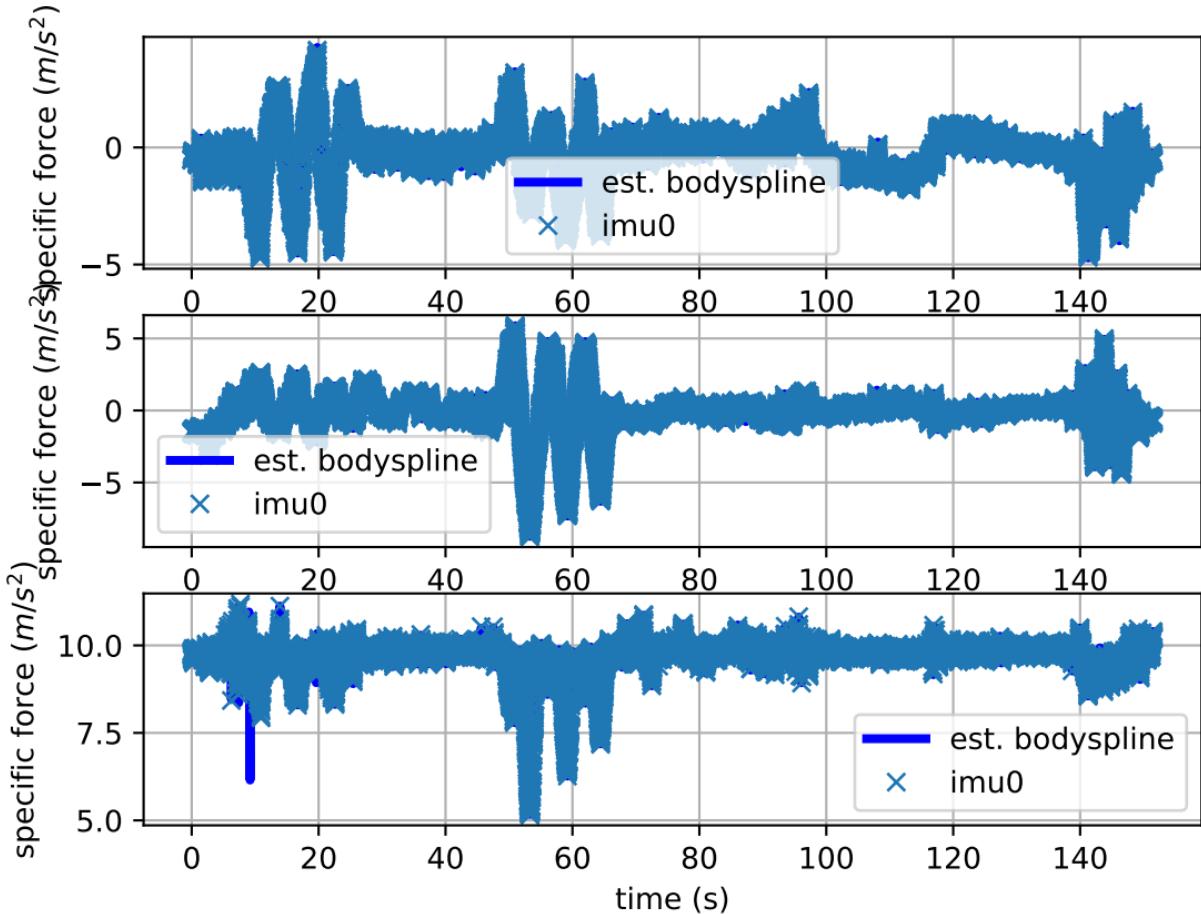
imu0: estimated poses



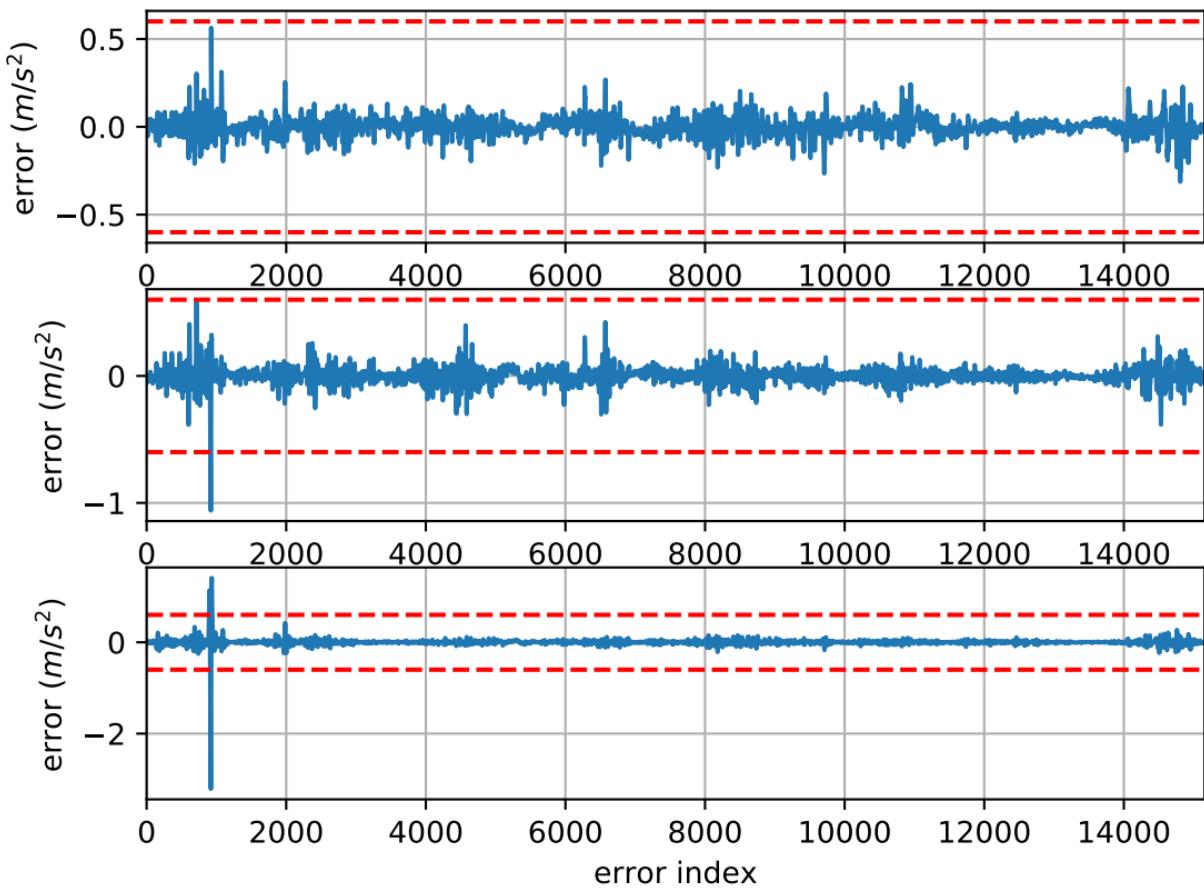
# imu0: sample inertial rate



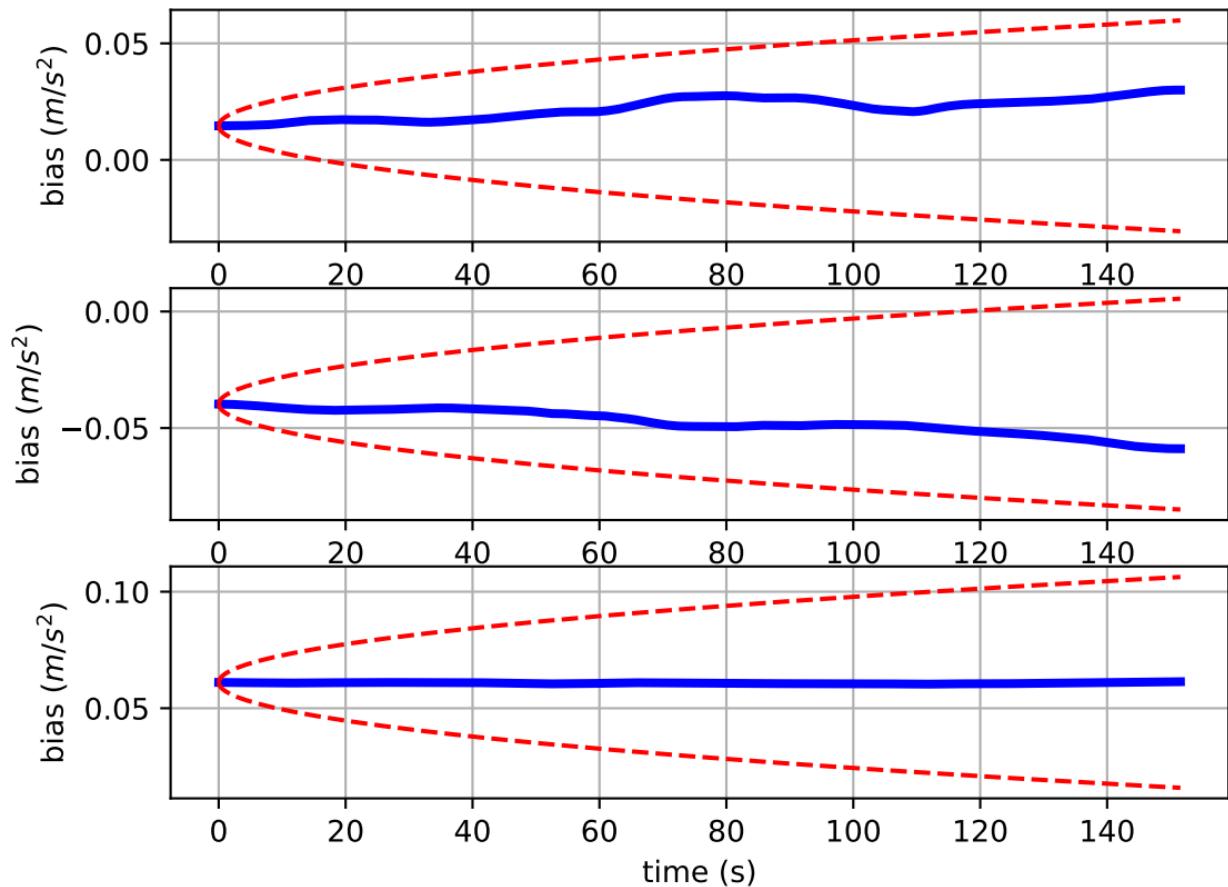
# Comparison of predicted and measured specific force (imu0 frame)



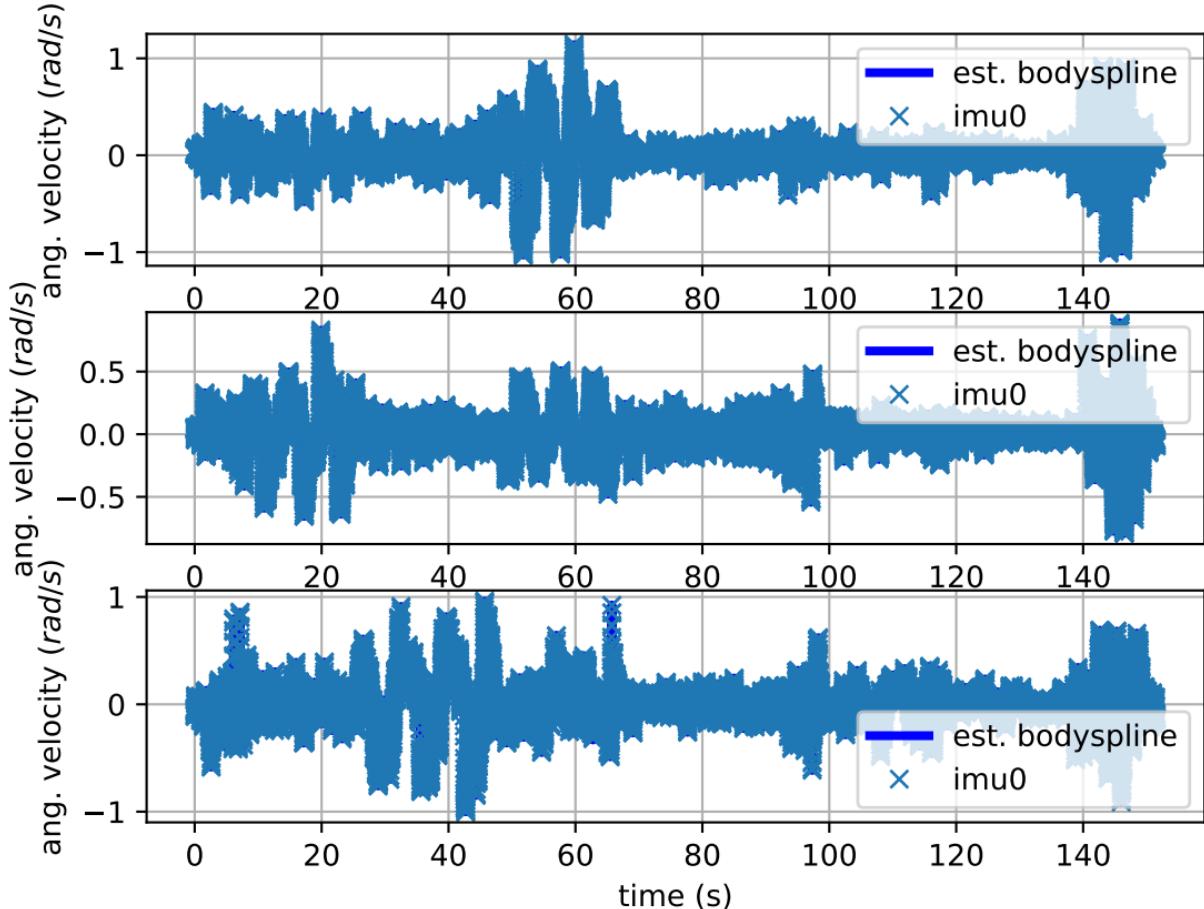
# imu0: acceleration error



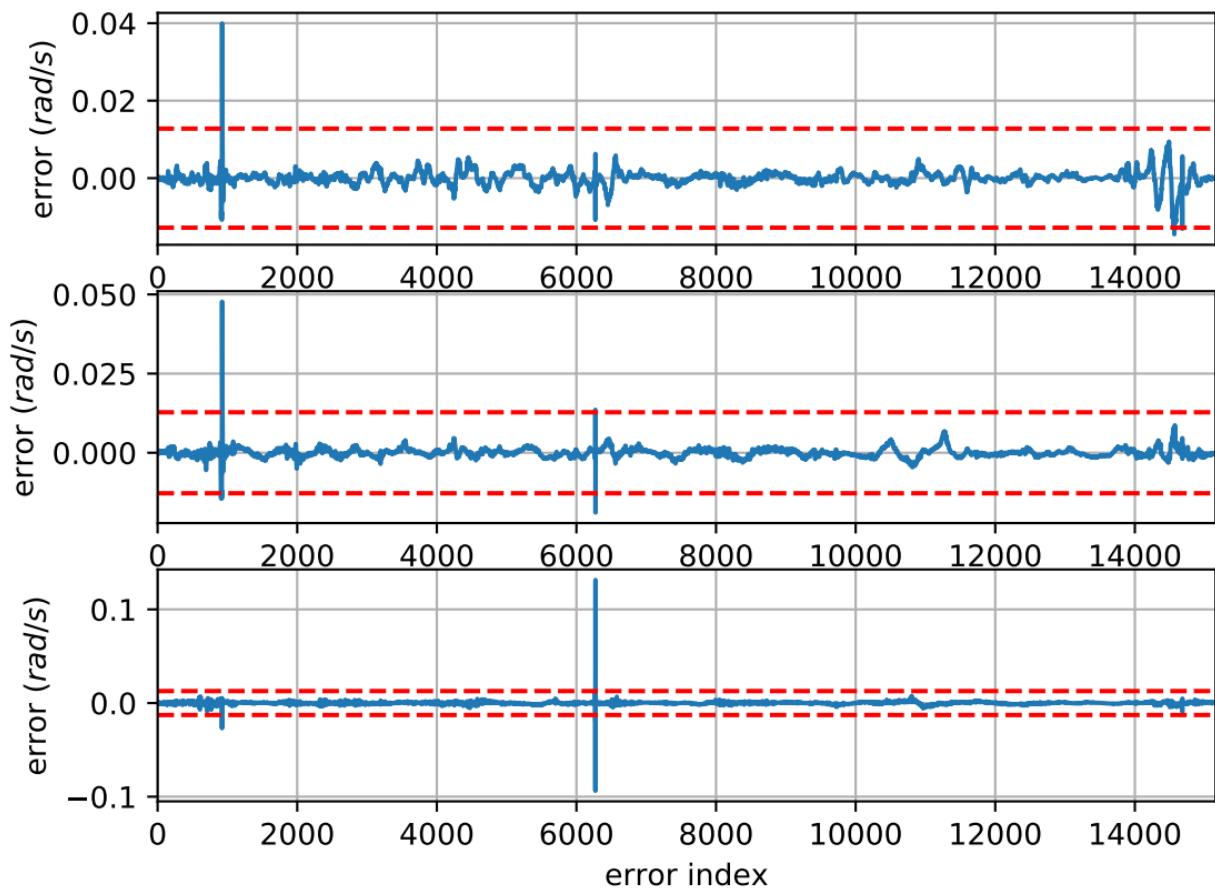
# imu0: estimated accelerometer bias (imu frame)



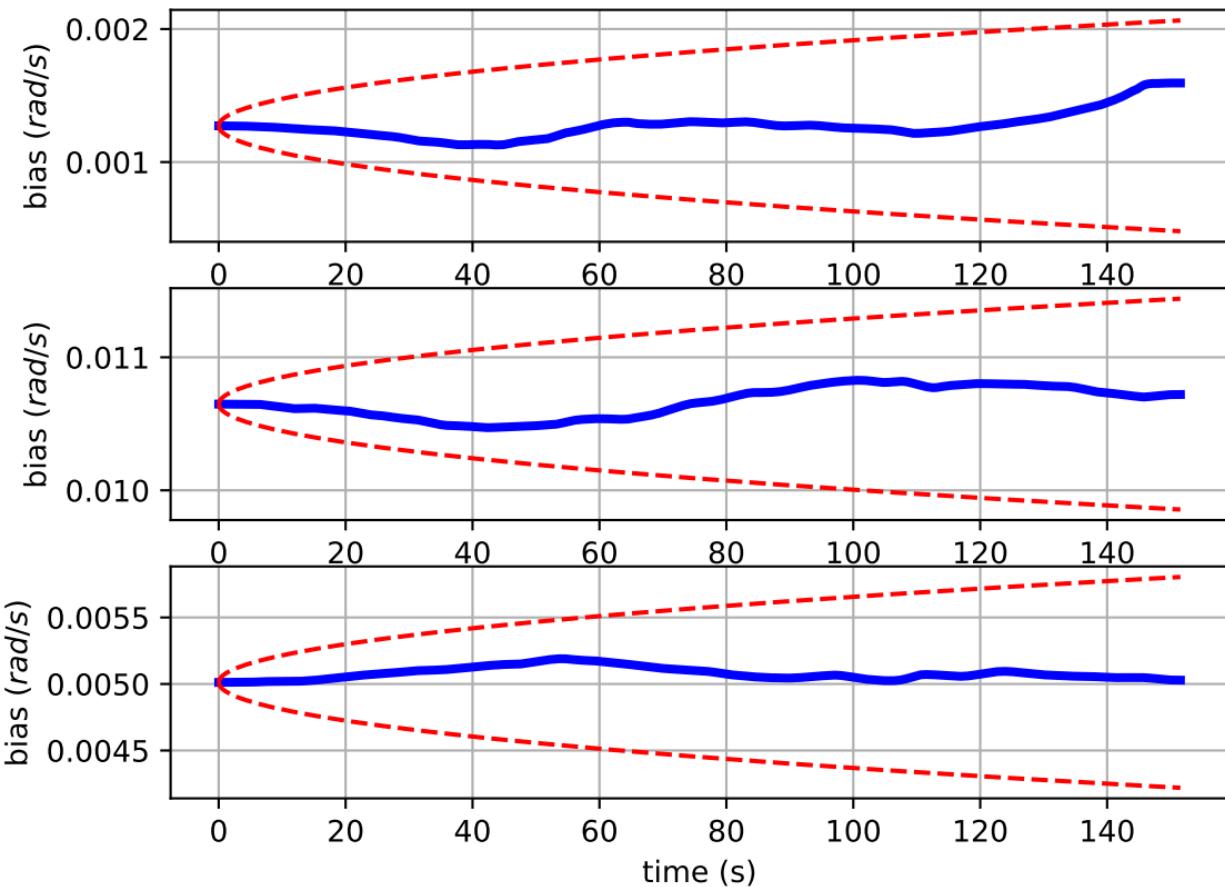
# Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



# imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

