

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.32582077016176625, median 0.275909252180504, std: 0.22559560853590419

Gyroscope error (imu0): mean 1.5868098485592352e-10, median 7.708712271557615e-11, std:

3.9621030345351236e-10

Accelerometer error (imu0): mean 2.985536549787367e-10, median 9.267957642886584e-12, std:

2.7116146942162793e-09

Residuals

Reprojection error (cam0) [px]: mean 0.32582077016176625, median 0.275909252180504, std: 0.22559560853590419

Gyroscope error (imu0) [rad/s]: mean 8.19340283682446e-12, median 3.980349948759845e-12, std:

2.045809475686466e-11

Accelerometer error (imu0) [m/s^2]: mean 7.443783273538134e-11, median 2.3107628036539194e-12, std:

6.760818957826837e-10

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ 0.00701443 -0.9999271 -0.00982836  0.00014258]
 [-0.99786842 -0.00636162 -0.06494719  0.00027211]
 [ 0.06487993  0.01026298 -0.9978403 -0.00012072]
 [ 0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[ 0.00701443 -0.99786842  0.06487993  0.00027836]
 [-0.9999271 -0.00636162  0.01026298  0.00014554]
 [-0.00982836 -0.06494719 -0.9978403 -0.00010138]
 [ 0.          0.          0.          1.        ]]
```

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

0.001119726538698815

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

```
[-0.25096094 -9.79838883  0.31147687]
```

Calibration configuration

cam0

Camera model: pinhole

Focal length: [361.65862437029585, 483.6653441861979]

Principal point: [318.5895971382657, 243.62500577183735]

Distortion model: radtan

Distortion coefficients: [-0.3968364649935277, 0.1376412687903212, 0.00022240368002503756,
0.0002960657813114394]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.055 [m]

Spacing 0.0165 [m]

IMU configuration

IMU0:

Model: calibrated

Update rate: 200.0

Accelerometer:

Noise density: 0.01763016309673612

Noise density (discrete): 0.24932815758253865

Random walk: 0.0009121684278958112

Gyroscope:

Noise density: 0.00365110584117691

Noise density (discrete): 0.051634433982520135

Random walk: 6.888677868055541e-05

T_{ib} (imu0 to imu0)

$\begin{bmatrix} 1. & 0. & 0. & 0. \end{bmatrix}$

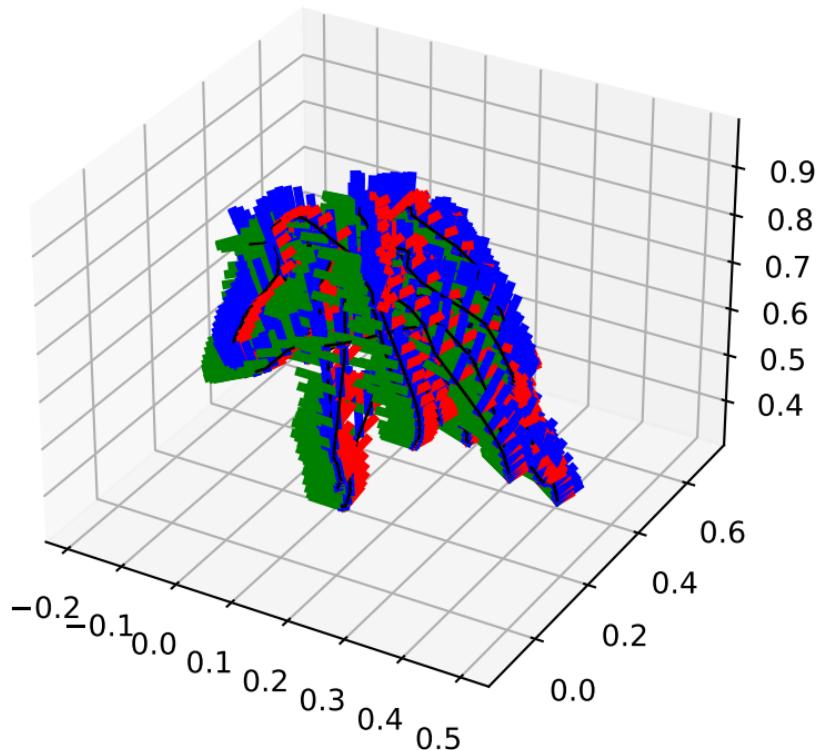
$\begin{bmatrix} 0. & 1. & 0. & 0. \end{bmatrix}$

$\begin{bmatrix} 0. & 0. & 1. & 0. \end{bmatrix}$

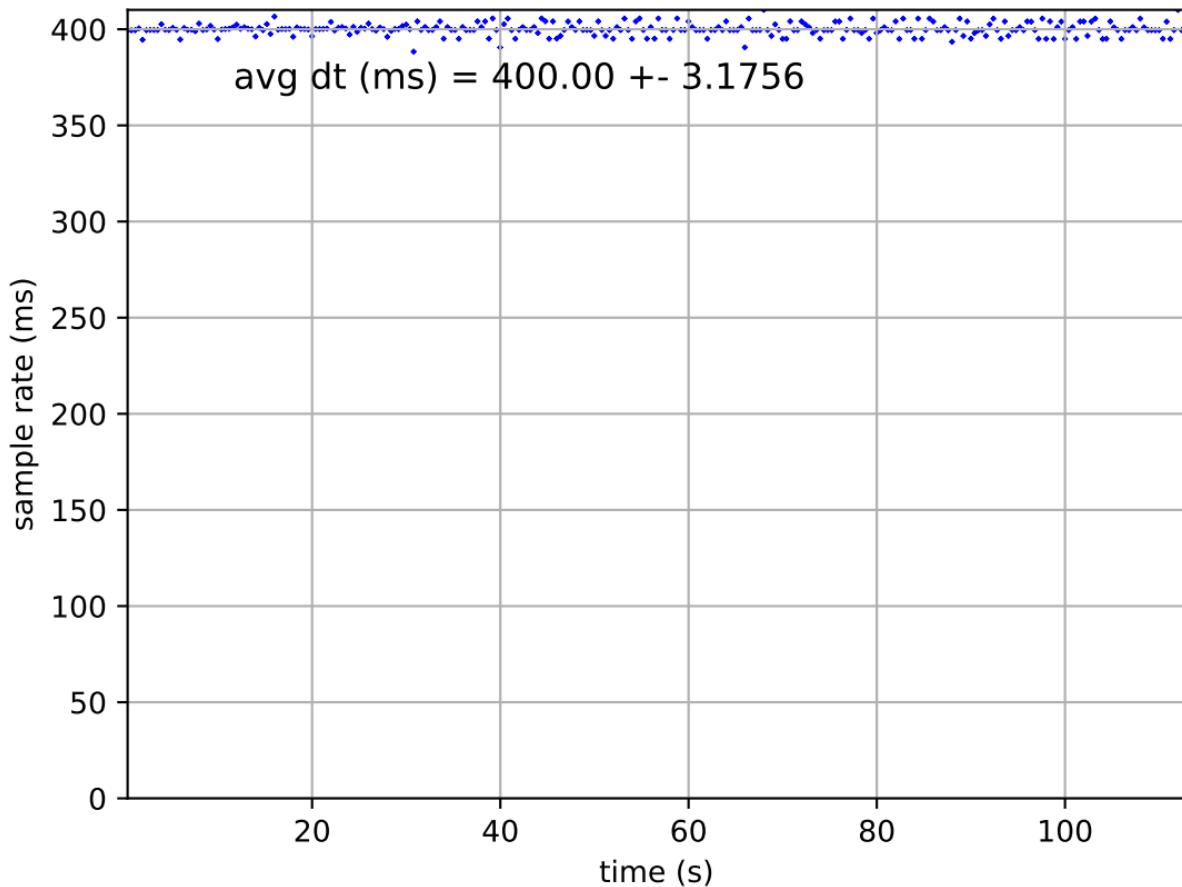
$\begin{bmatrix} 0. & 0. & 0. & 1. \end{bmatrix}$

time offset with respect to IMU0: 0.0 [s]

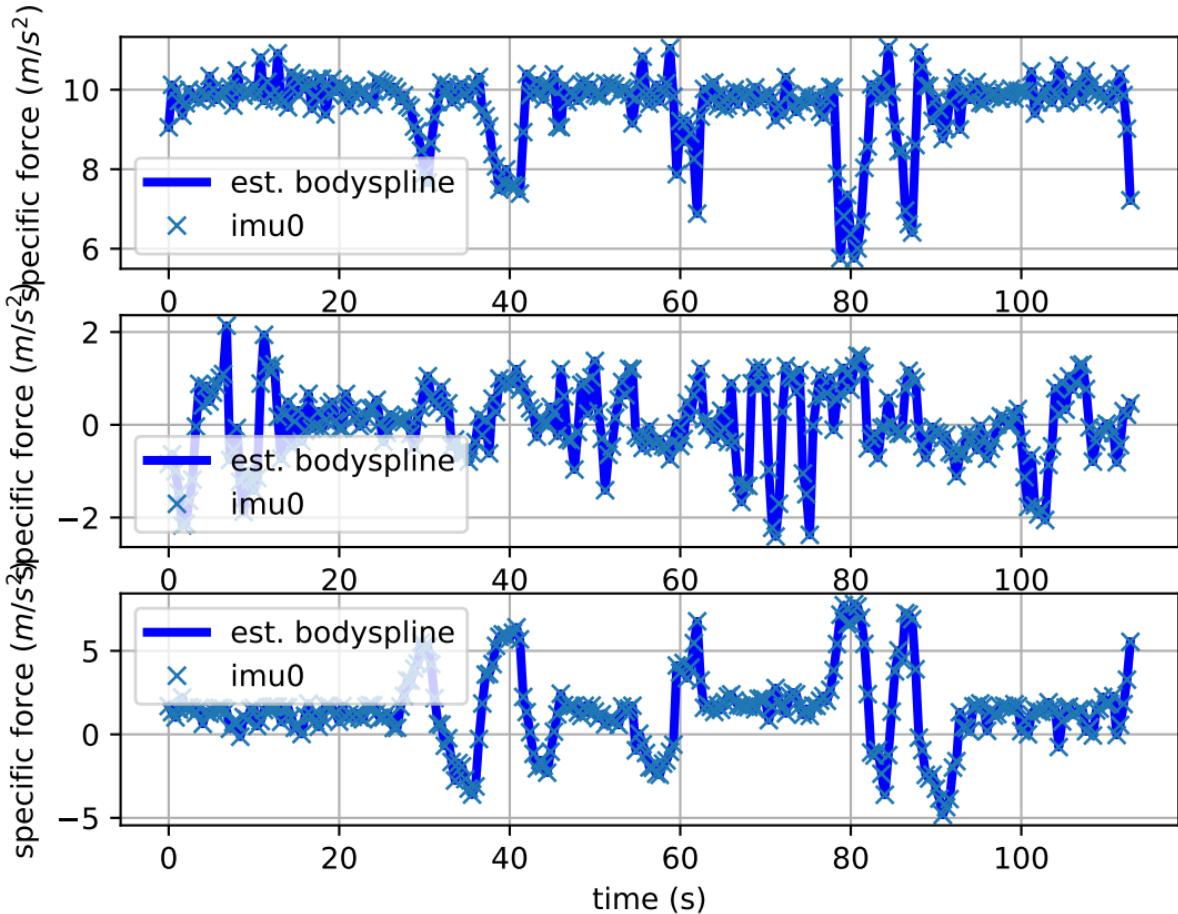
imu0: estimated poses



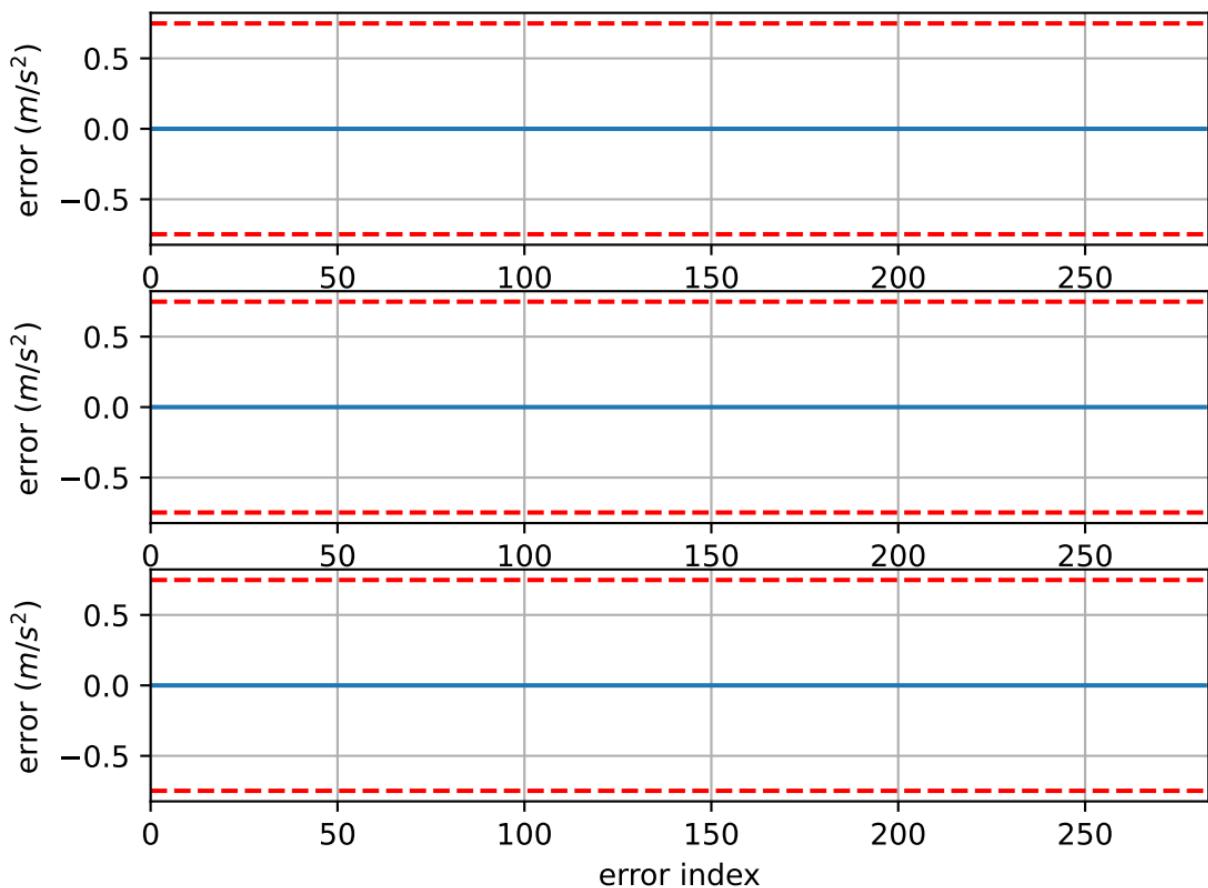
imu0: sample inertial rate



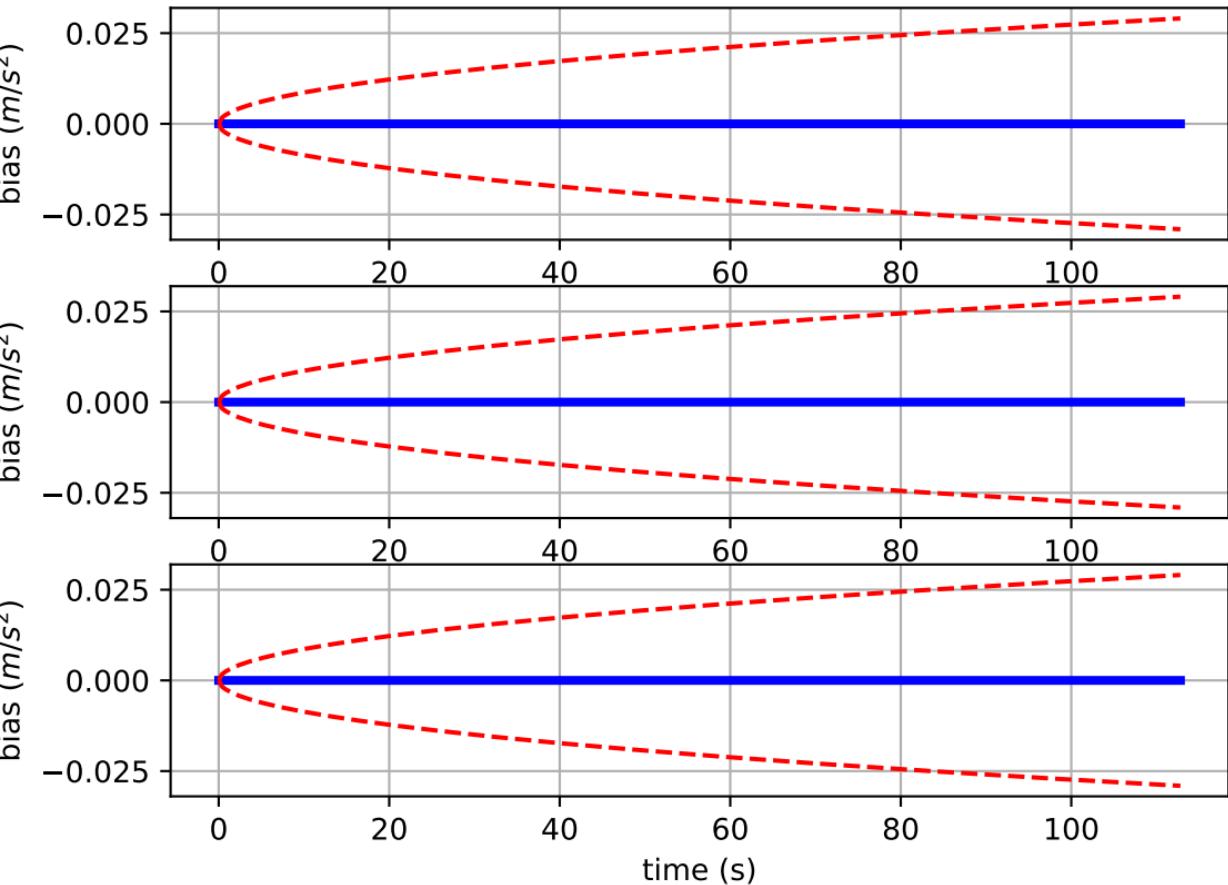
Comparison of predicted and measured specific force (imu0 frame)



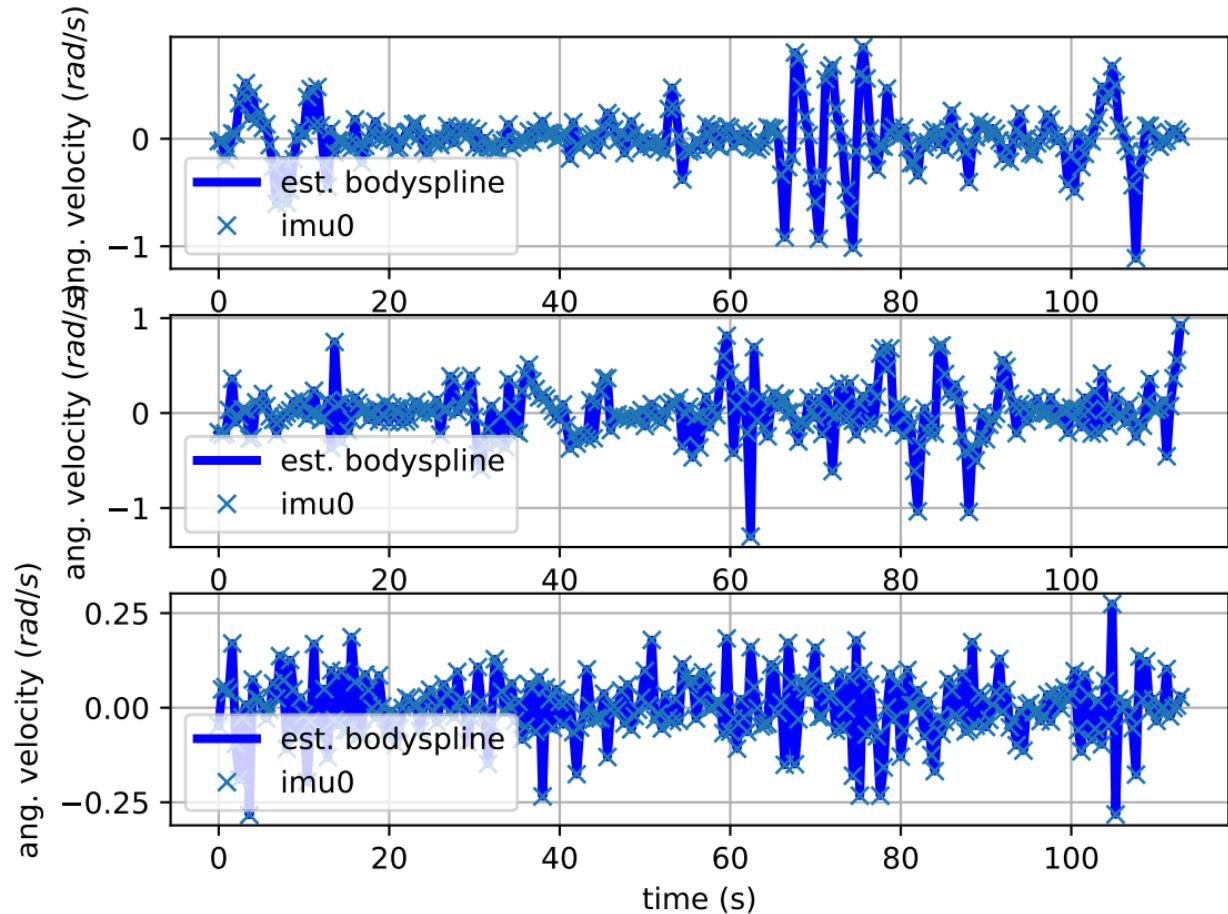
imu0: acceleration error



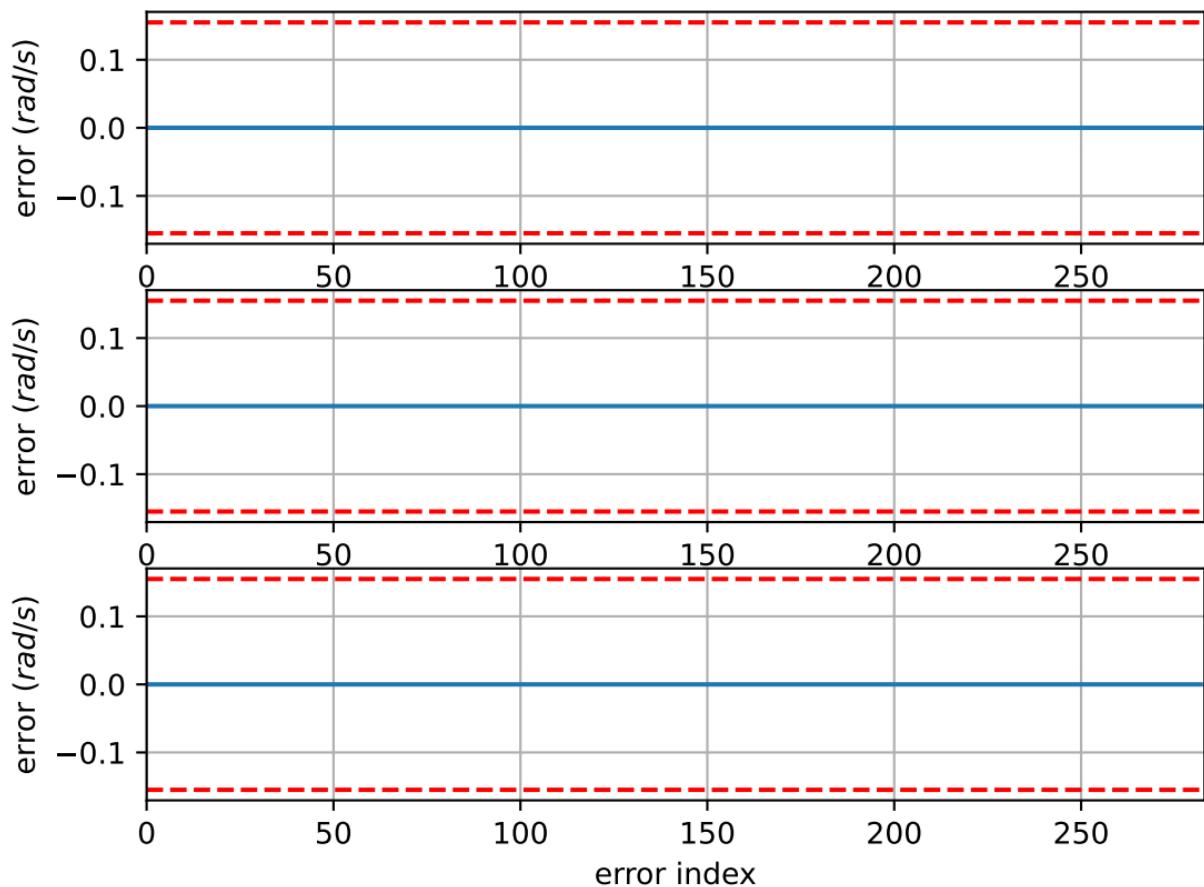
imu0: estimated accelerometer bias (imu frame)



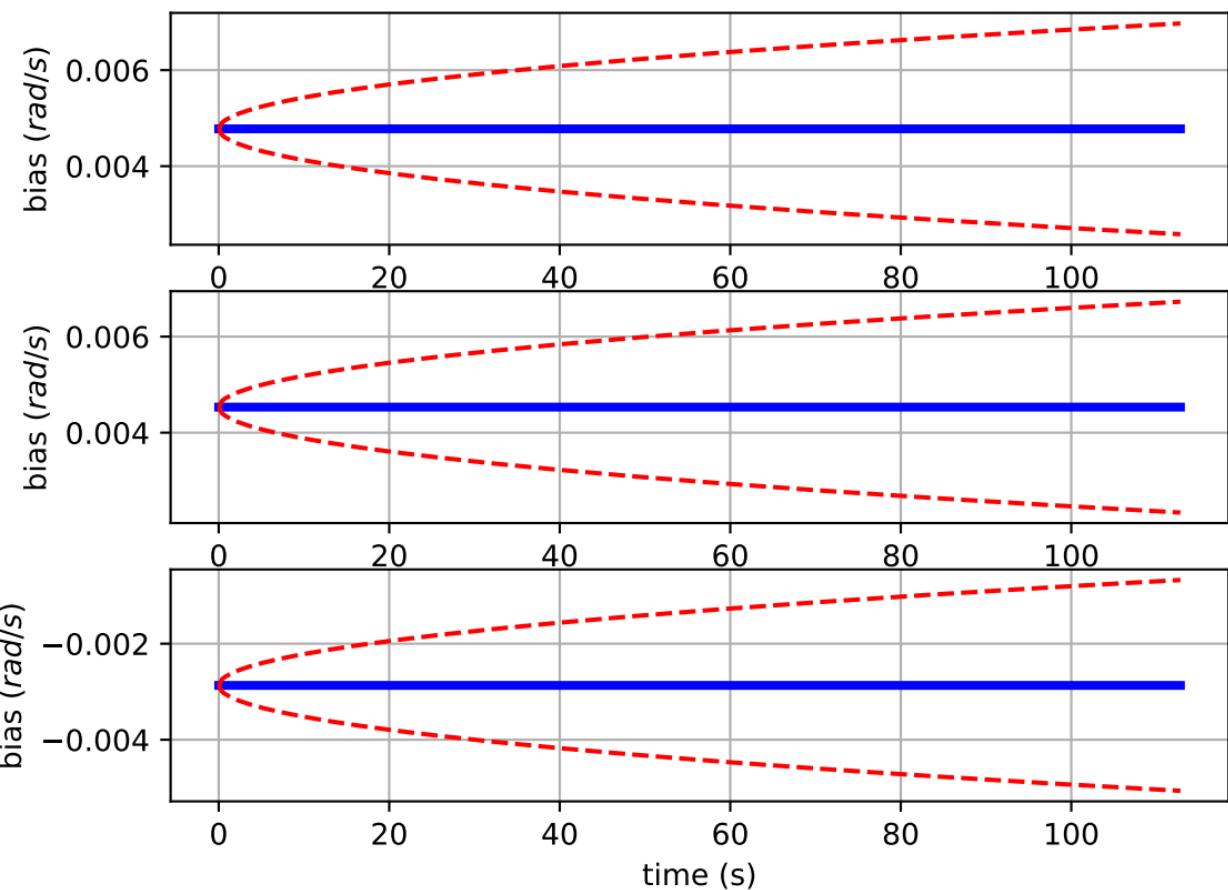
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

