

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.325139041200457, median 0.26482397125042456, std: 0.23337359612320022
Reprojection error (cam1): mean 0.32619489426239706, median 0.2667286406540171, std: 0.23249596707184259
Gyroscope error (imu0): mean 0.6481715100400051, median 0.4743523372687932, std: 0.5724890567761379
Accelerometer error (imu0): mean 0.9259914323778934, median 0.7095208503120525, std: 0.797258428487434

Residuals

Reprojection error (cam0) [px]: mean 0.325139041200457, median 0.26482397125042456, std: 0.23337359612320022
Reprojection error (cam1) [px]: mean 0.32619489426239706, median 0.2667286406540171, std: 0.23249596707184259
Gyroscope error (imu0) [rad/s]: mean 0.00803419453357865, median 0.005879676746113042, std: 0.007096097837130429
Accelerometer error (imu0) [m/s^2]: mean 0.18874640065656947, median 0.1446228355950236, std: 0.16250653462710007

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.99998619 -0.0013186  0.00508675  0.01559779]
 [ 0.00130024 -0.99999263 -0.00361168  0.00511827]
 [ 0.00509147 -0.00360502  0.99998054 -0.00414135]
 [ 0.          0.          1.          ]]]
```

T_ic: (cam0 to imu0):

```
[[-0.99998619  0.00130024  0.00509147  0.01561201]
 [-0.0013186 -0.99999263 -0.00360502  0.00512387]
 [ 0.00508675 -0.00361168  0.99998054  0.00408042]
 [ 0.          0.          1.          ]]]
```

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
0.006762587307573936

Transformation (cam1):

T_ci: (imu0 to cam1):
[[-0.99999999 0.000167 -0.00003086 -0.04901471]
[-0.00016695 -0.99999905 -0.00136755 0.00485458]
[-0.00003109 -0.00136754 0.99999906 -0.00429107]
[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):
[[-0.99999999 -0.00016695 -0.00003109 -0.04901404]
[0.000167 -0.99999905 -0.00136754 0.0048569]
[-0.00003086 -0.00136755 0.99999906 0.0042962]
[0. 0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
0.006743885629529057

Baselines:

Baseline (cam0 to cam1):
[[0.9999858 -0.00146712 -0.00512294 -0.06462599]
[0.0014786 0.99999641 0.00223664 -0.00027747]
[0.00511964 -0.00224419 0.99998438 -0.00021815]
[0. 0. 0. 1.]]
baseline norm: 0.06462695766679989 [m]

Gravity vector in target coords: [m/s^2]
[0.1659612 -9.80503057 0.04748928]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [285.2489878860831, 285.99964868407267]
Principal point: [426.51375763352166, 404.9772011788081]
Distortion model: equidistant
Distortion coefficients: [-0.008747800085824447, 0.04669796865951601, -0.04348086746351353, 0.007859294528663]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.088 [m]
Spacing 0.026399999999999996 [m]

cam1

Camera model: pinhole
Focal length: [285.4999216305412, 286.20780673320627]
Principal point: [430.61379773875336, 398.762531607328]
Distortion model: equidistant
Distortion coefficients: [-0.010128276510389637, 0.0509413938683162, -0.04827038583558463, 0.00973320146732395]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.088 [m]
Spacing 0.026399999999999996 [m]

IMU configuration

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IMU0:

Model: calibrated
Update rate: 200

Accelerometer:

Noise density: 0.01441307718

Noise density (discrete): 0.20383169223486164

Random walk: 0.00274153402

Gyroscope:

Noise density: 0.00087647071

Noise density (discrete): 0.01239516765104776

Random walk: 2.195087e-05

T_{ib} (imu0 to imu0)

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

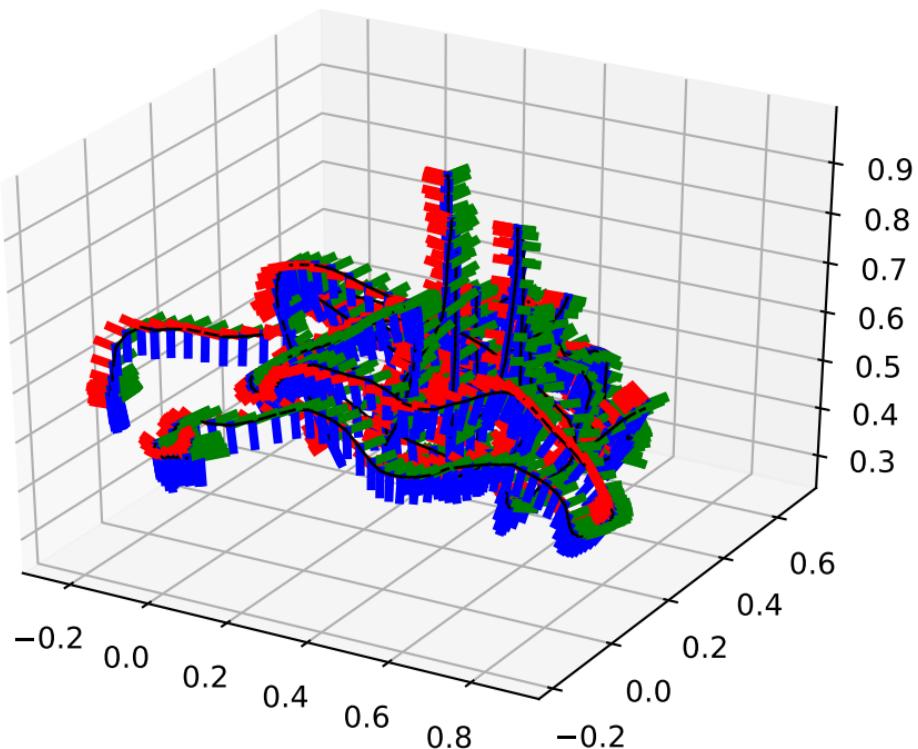
$\begin{bmatrix} 0. & 1. & 0. & 0. \end{bmatrix}$

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

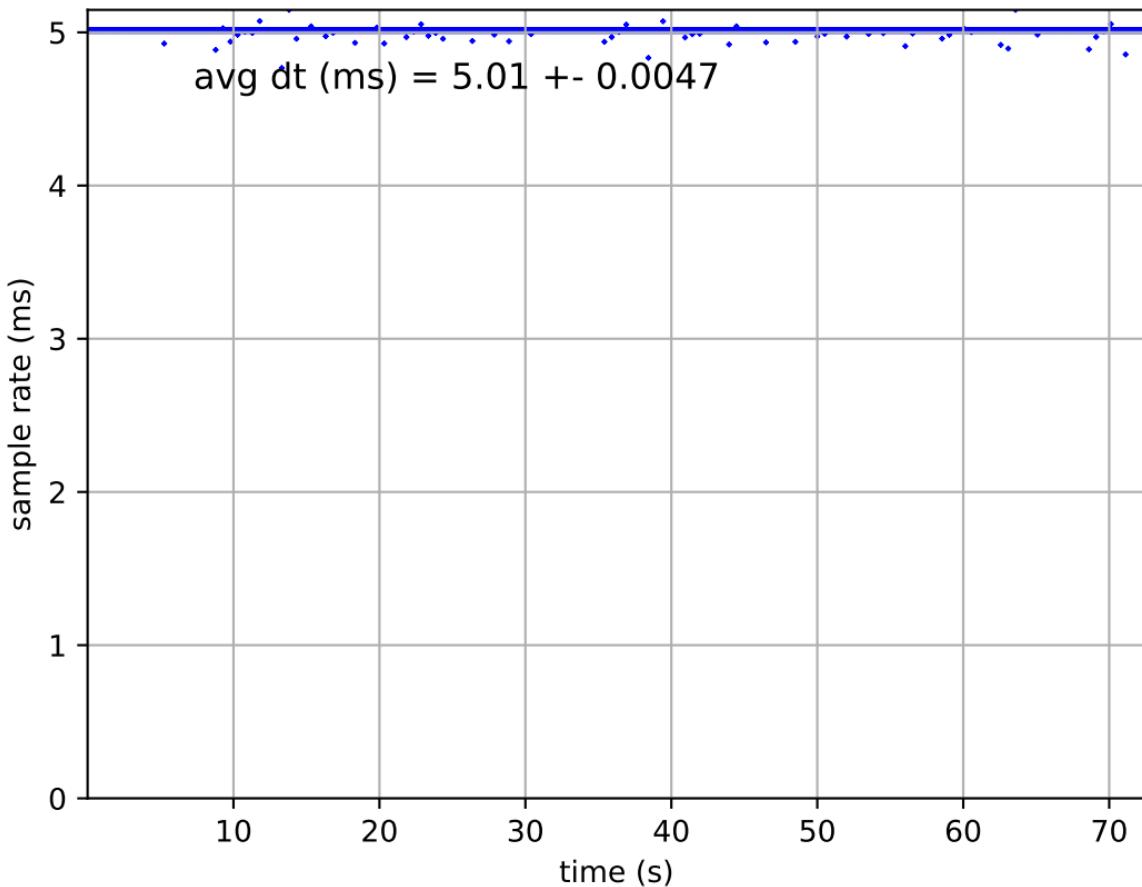
$\begin{bmatrix} 0. & 0. & 0. & 1. \end{bmatrix}$

time offset with respect to IMU0: 0.0 [s]

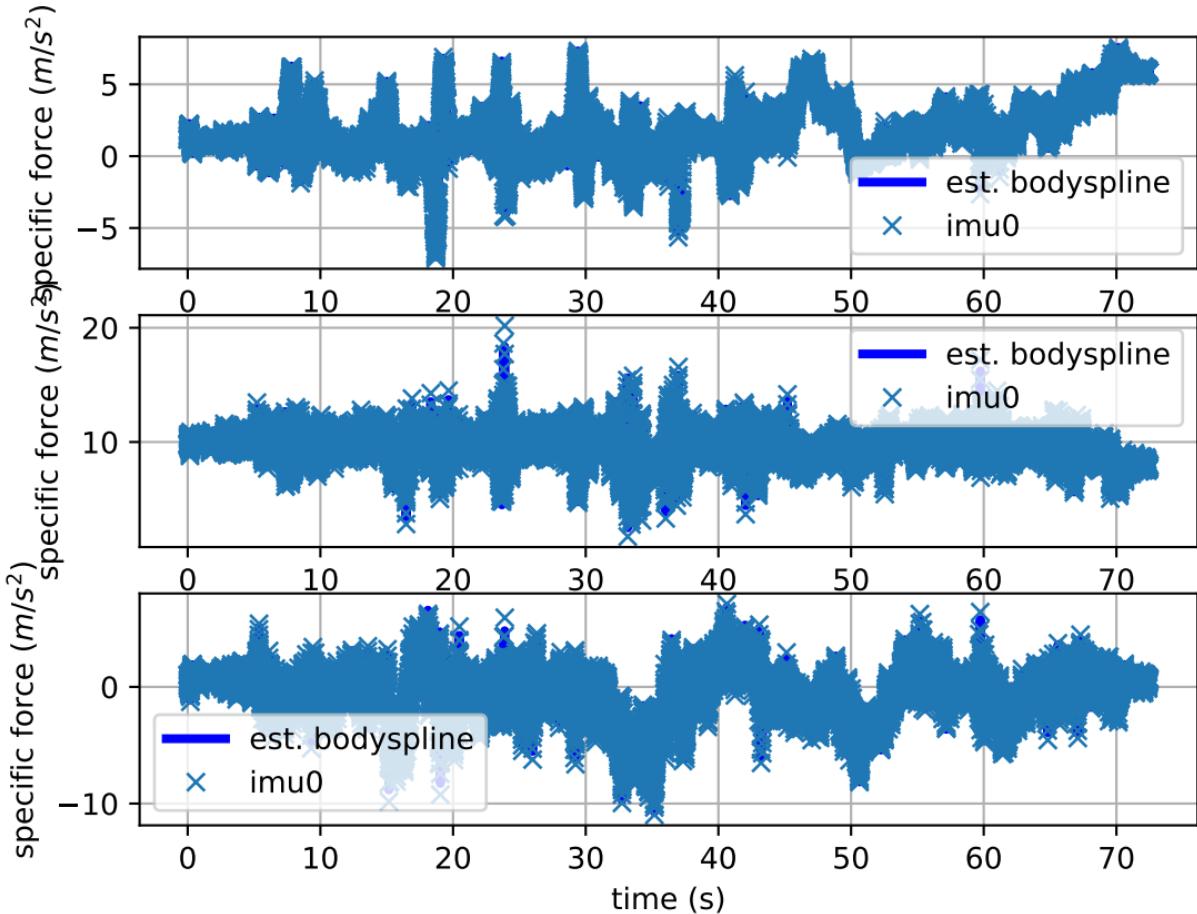
imu0: estimated poses



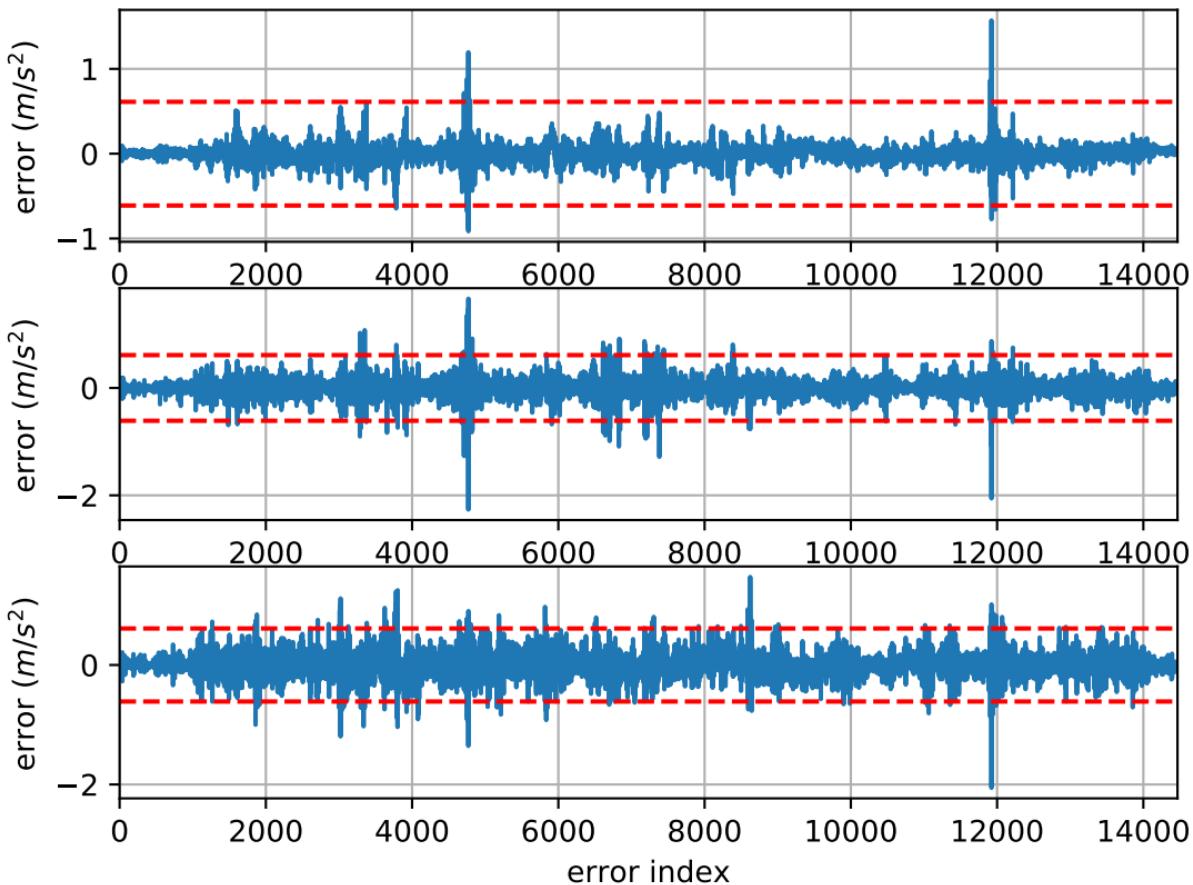
imu0: sample inertial rate



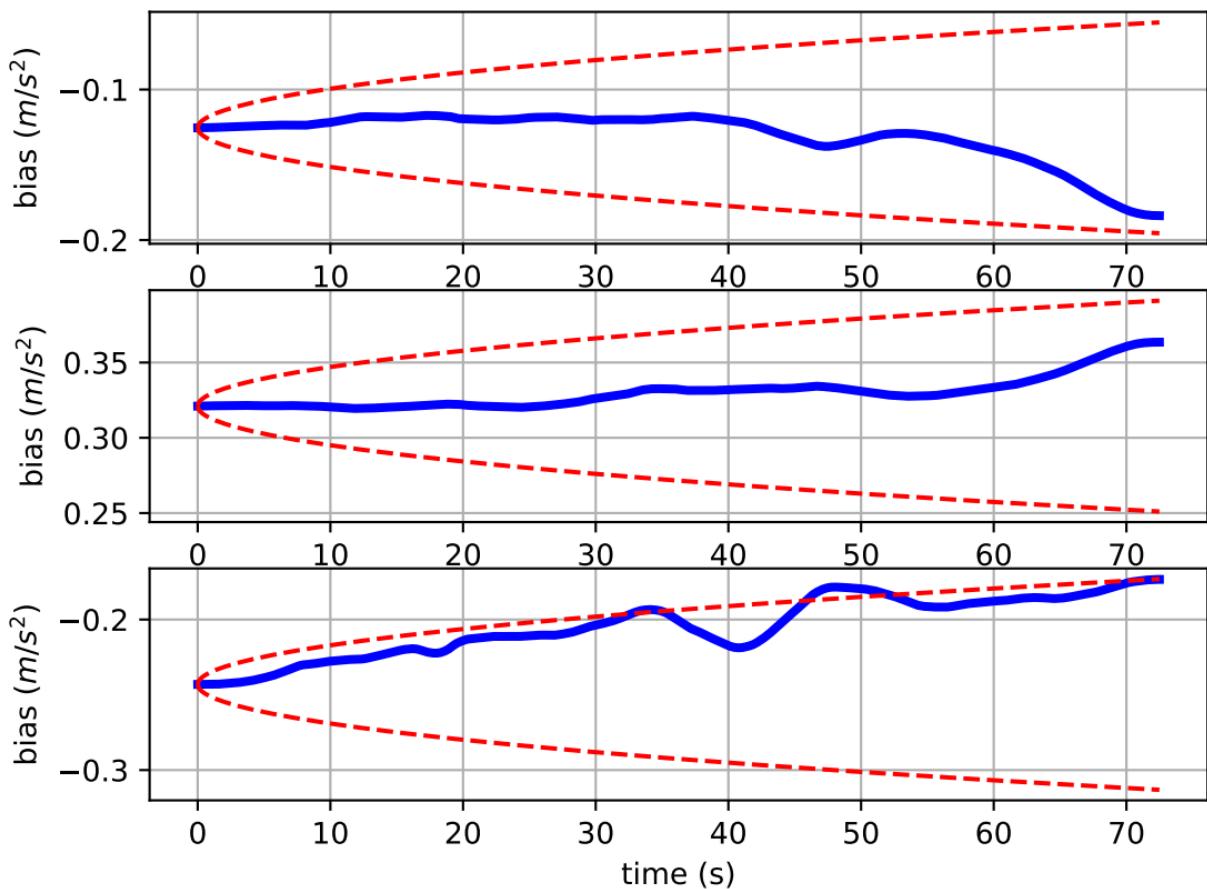
Comparison of predicted and measured specific force (imu0 frame)



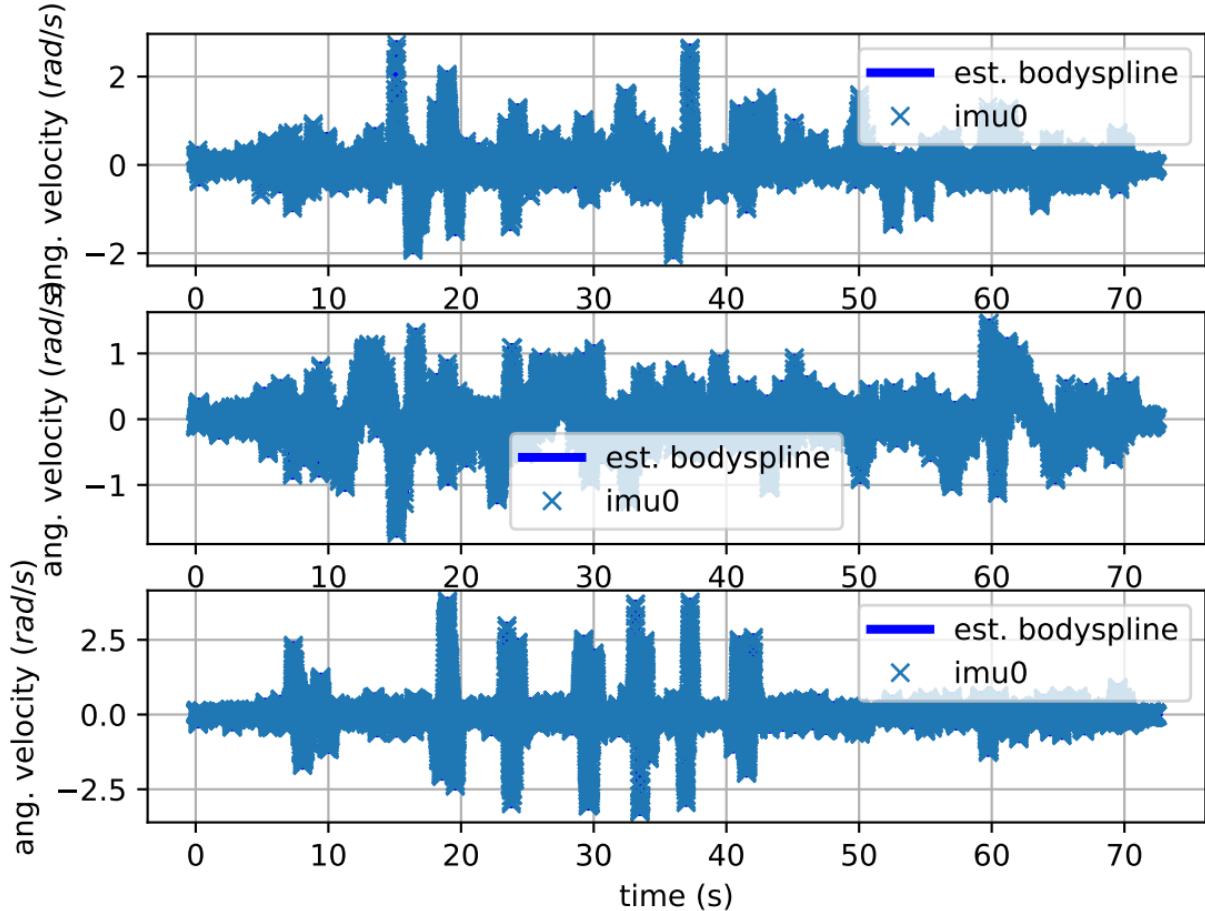
imu0: acceleration error



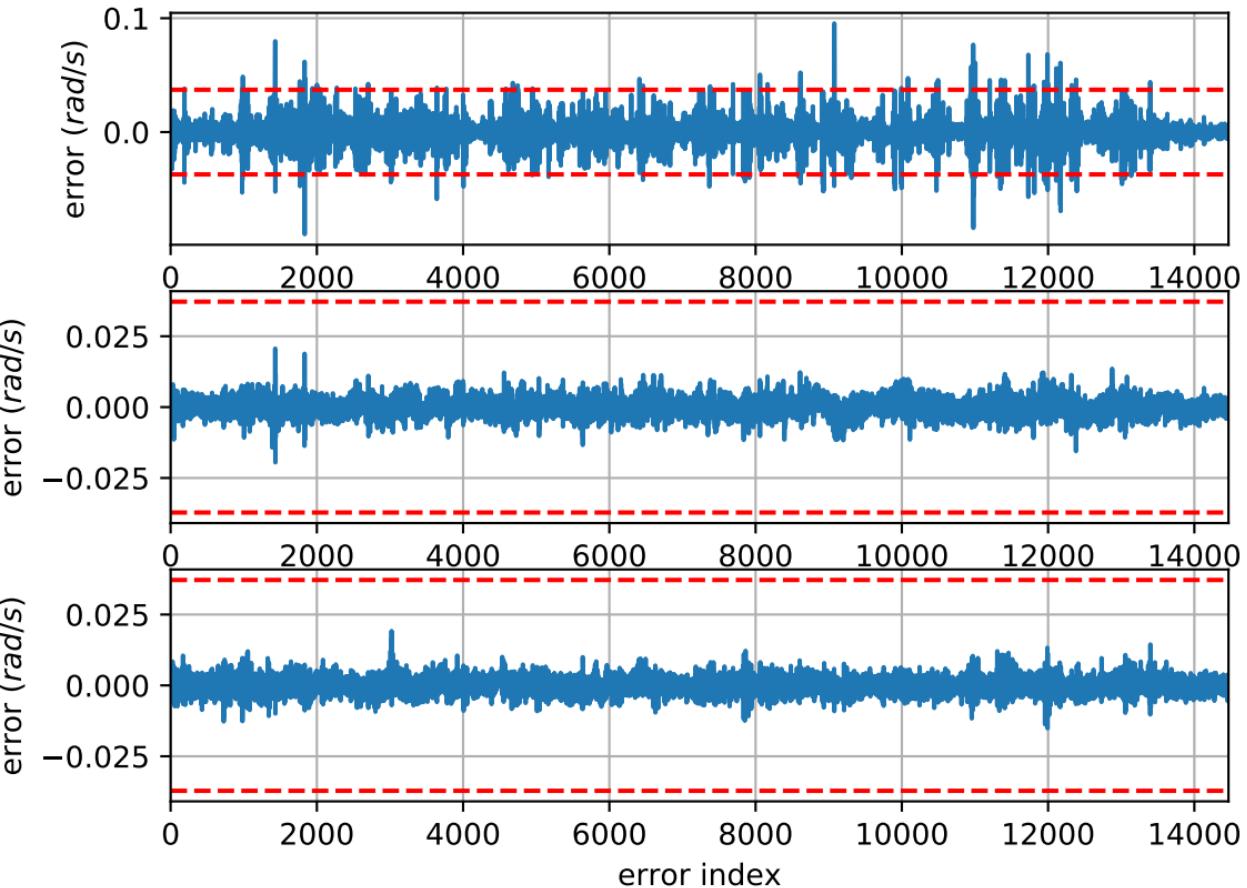
imu0: estimated accelerometer bias (imu frame)



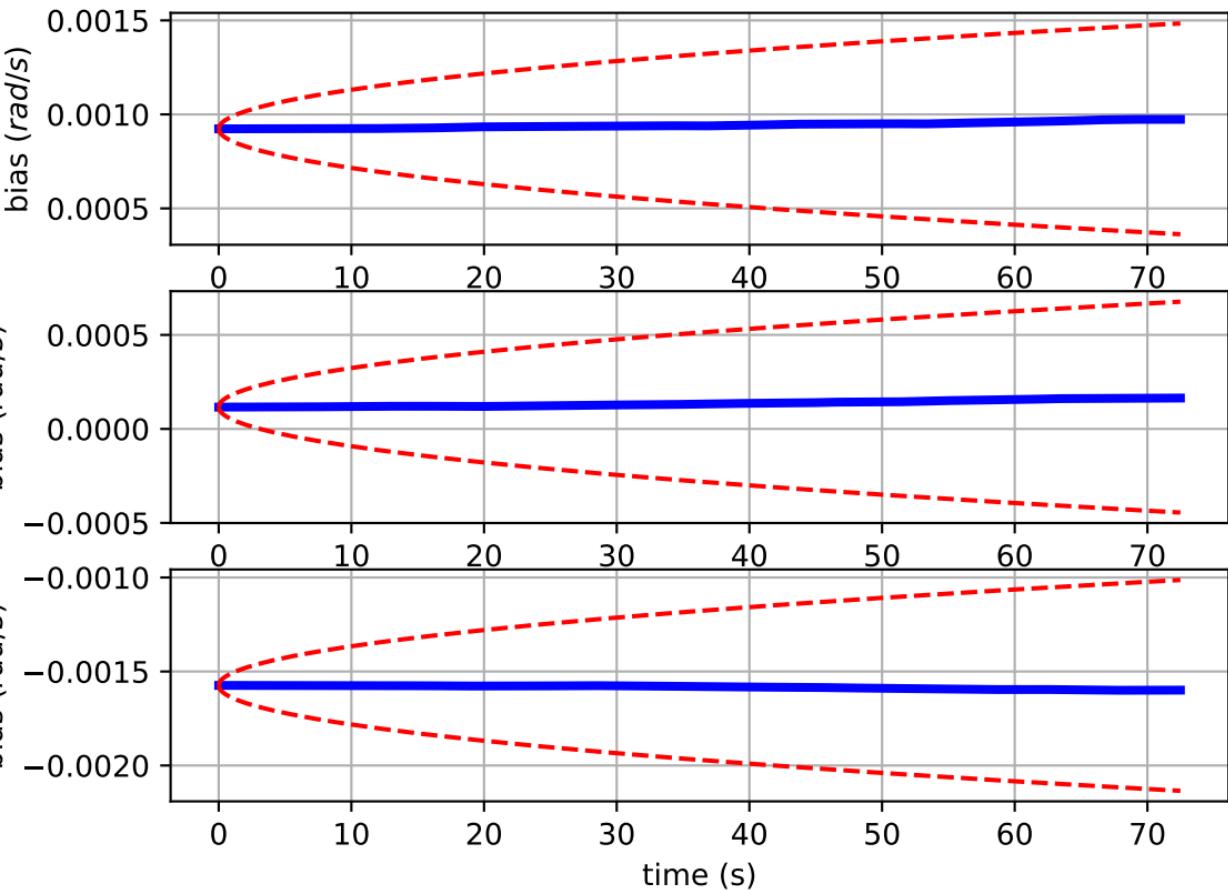
Comparison of predicted and measured angular velocities (body frame)



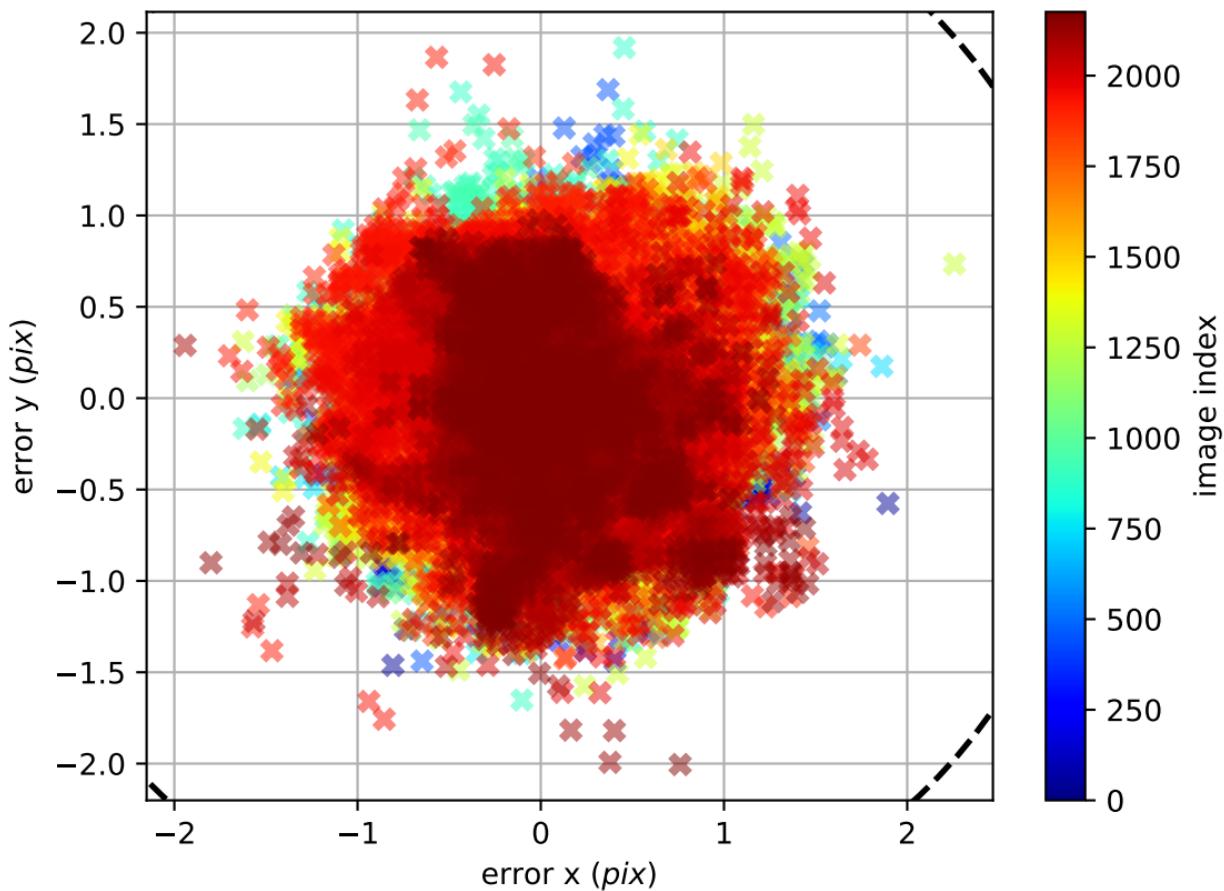
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

