

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.04729824275201091, median 0.04446045477147378, std: 0.024611042032601633
Reprojection error (cam1): mean 0.04544841867424886, median 0.04258332302709952, std: 0.023931827948610495
Gyroscope error (imu0): mean 0.09591851743038485, median 0.08677714563307605, std: 0.051703185033177466
Accelerometer error (imu0): mean 0.06048537895612714, median 0.05099356596029735, std: 0.03872477533730433

Residuals

Reprojection error (cam0) [px]: mean 0.04729824275201091, median 0.04446045477147378, std: 0.024611042032601633
Reprojection error (cam1) [px]: mean 0.04544841867424886, median 0.04258332302709952, std: 0.023931827948610495
Gyroscope error (imu0) [rad/s]: mean 0.004612020512663647, median 0.004172478749795264, std: 0.0024860283116461203
Accelerometer error (imu0) [m/s^2]: mean 0.025761146184574354, median 0.021718516604298837, std: 0.01649315281884401

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.99988466  0.00381077 -0.0147016  0.00450173]
 [-0.00370602  0.9999676  0.00714548 -0.01037021]
 [ 0.01472836 -0.00709017  0.99986639 -0.02481389]
 [ 0.          0.          1.          ]]
```

T_ic: (cam0 to imu0):

```
[[-0.99988466 -0.00370602  0.01472836 -0.00417418]
 [ 0.00381077  0.9999676 -0.00709017  0.01017679]
 [-0.0147016  0.00714548  0.99986639  0.02495085]
 [ 0.          0.          1.          ]]
```

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
0.0024952480751685583

Transformation (cam1):

T_ci: (imu0 to cam1):
[[0.99989216 0.00382692 -0.01417805 -0.04549552]
[-0.00373054 0.9999698 0.00681776 -0.01031416]
[0.01420371 -0.00676414 0.99987624 -0.02501294]
[0. 0. 1.]]

T_ic: (cam1 to imu0):
[[-0.99989216 -0.00373054 0.01420371 0.04580742]
[0.00382692 0.9999698 -0.00676414 0.01031876]
[-0.01417805 0.00681776 0.99987624 0.02443513]
[0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
0.0025268302129395222

Baselines:

Baseline (cam0 to cam1):
[[0.99999986 0.00001986 0.00052348 -0.04998406]
[-0.00001969 0.99999995 -0.00032805 0.000048]
[-0.00052349 0.00032804 0.99999981 -0.0001933]
[0. 0. 1.]]
baseline norm: 0.049984457783466406 [m]

Gravity vector in target coords: [m/s^2]
[0.07847541 -9.63434909 -1.82799947]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [378.3332153894565, 378.64122344318935]
Principal point: [320.9497118306629, 240.13180640736076]
Distortion model: radtan
Distortion coefficients: [0.001843337813323217, -0.003745616714842316, -0.0001474187347749081, 0.0007726477912818445]
Type: checkerboard
Rows
Count: 11
Distance: 0.02 [m]
Cols
Count: 8
Distance: 0.02 [m]

cam1

Camera model: pinhole
Focal length: [378.37076311952967, 378.6625375928635]
Principal point: [320.571761443963, 240.248082374623]
Distortion model: radtan
Distortion coefficients: [0.0013500437712818743, -0.0037145663159549964, -0.00022429574953324402, 0.0005787120085607777]
Type: checkerboard
Rows
Count: 11
Distance: 0.02 [m]
Cols
Count: 8
Distance: 0.02 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 200.0

Accelerometer:

Noise density: 0.03011617265630973

Noise density (discrete): 0.4259069981732298

Random walk: 0.0012921351153510423

Gyroscope:

Noise density: 0.003399959743792756

Noise density (discrete): 0.04808269181194269

Random walk: 2.7536285840415453e-05

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

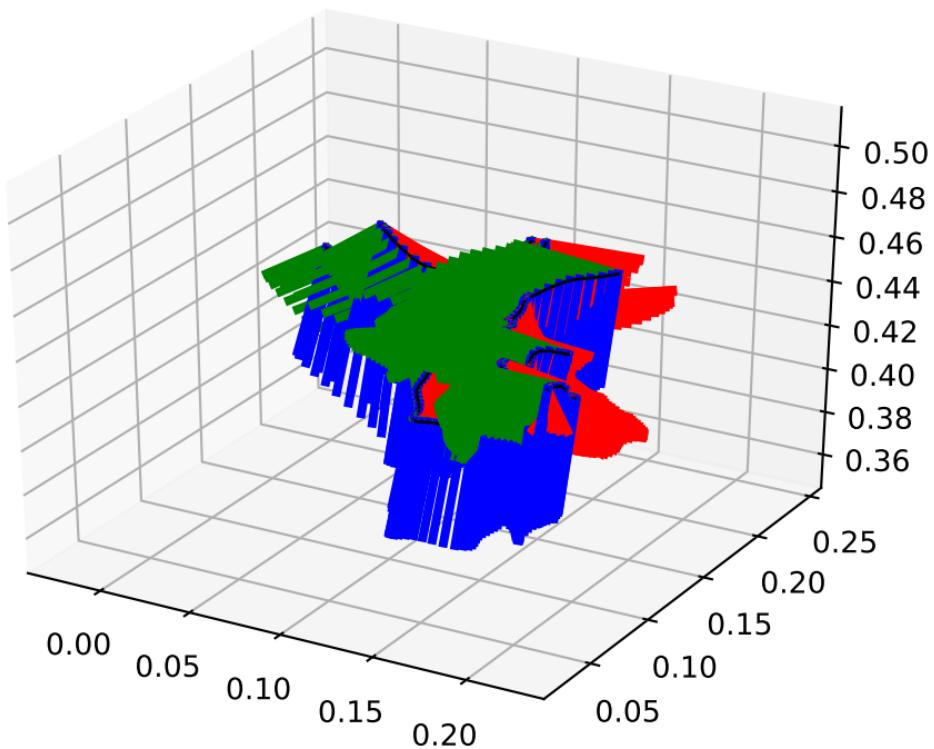
[0. 1. 0. 0.]

[0. 0. 1. 0.]

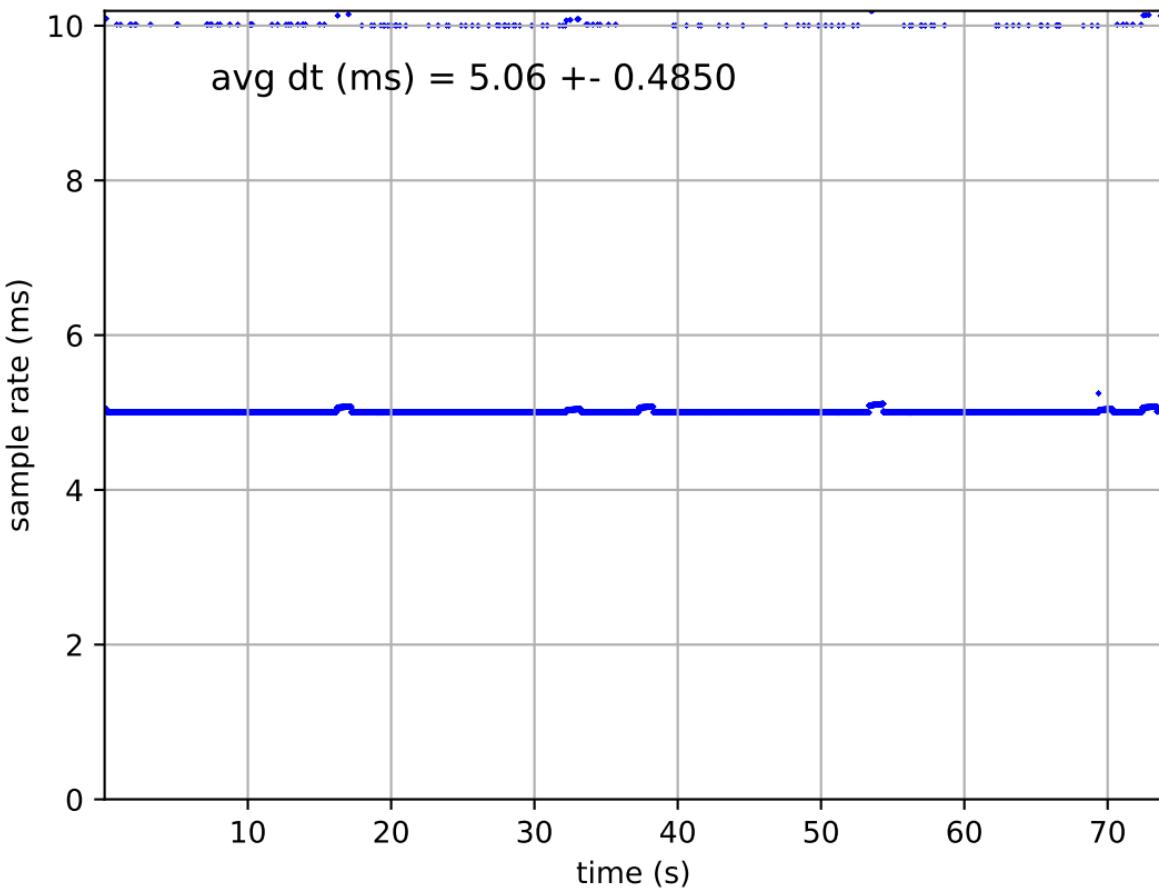
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

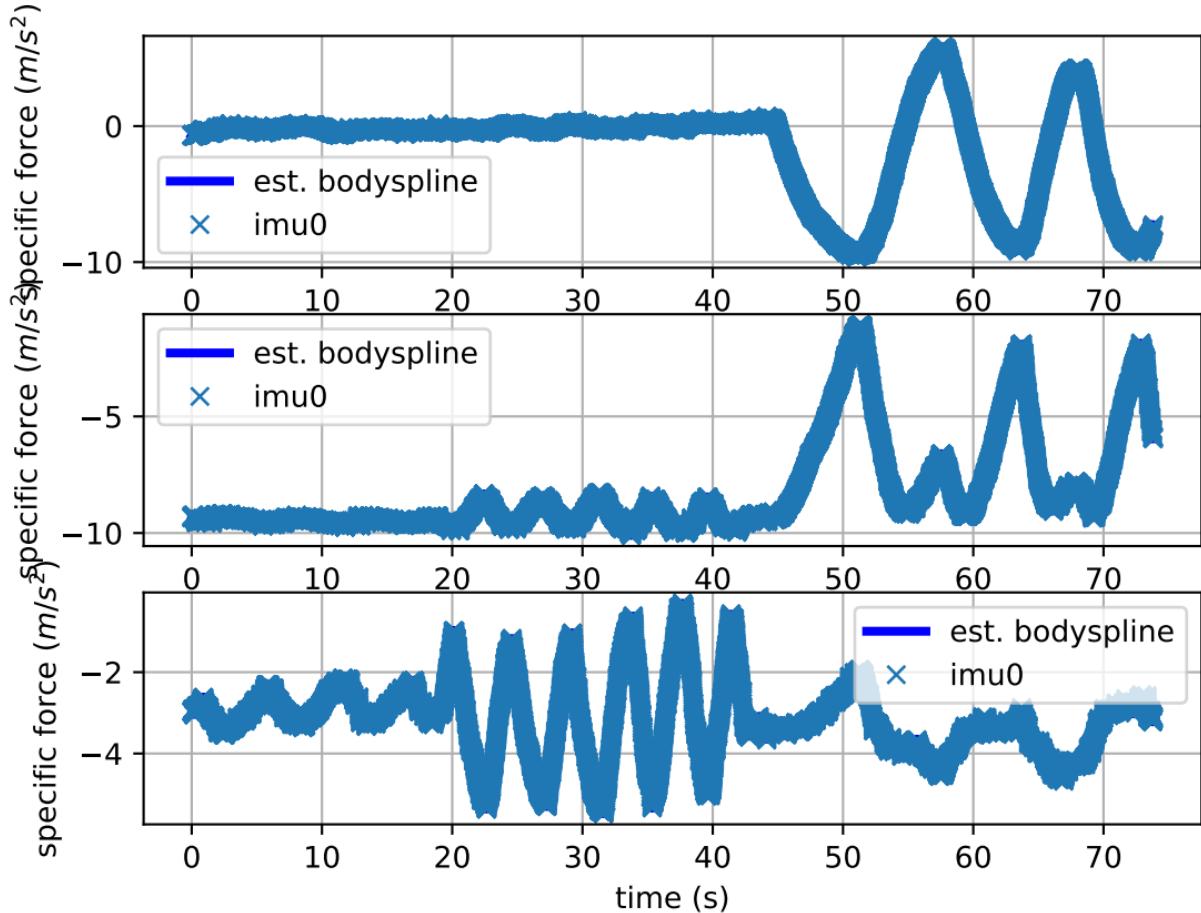
imu0: estimated poses



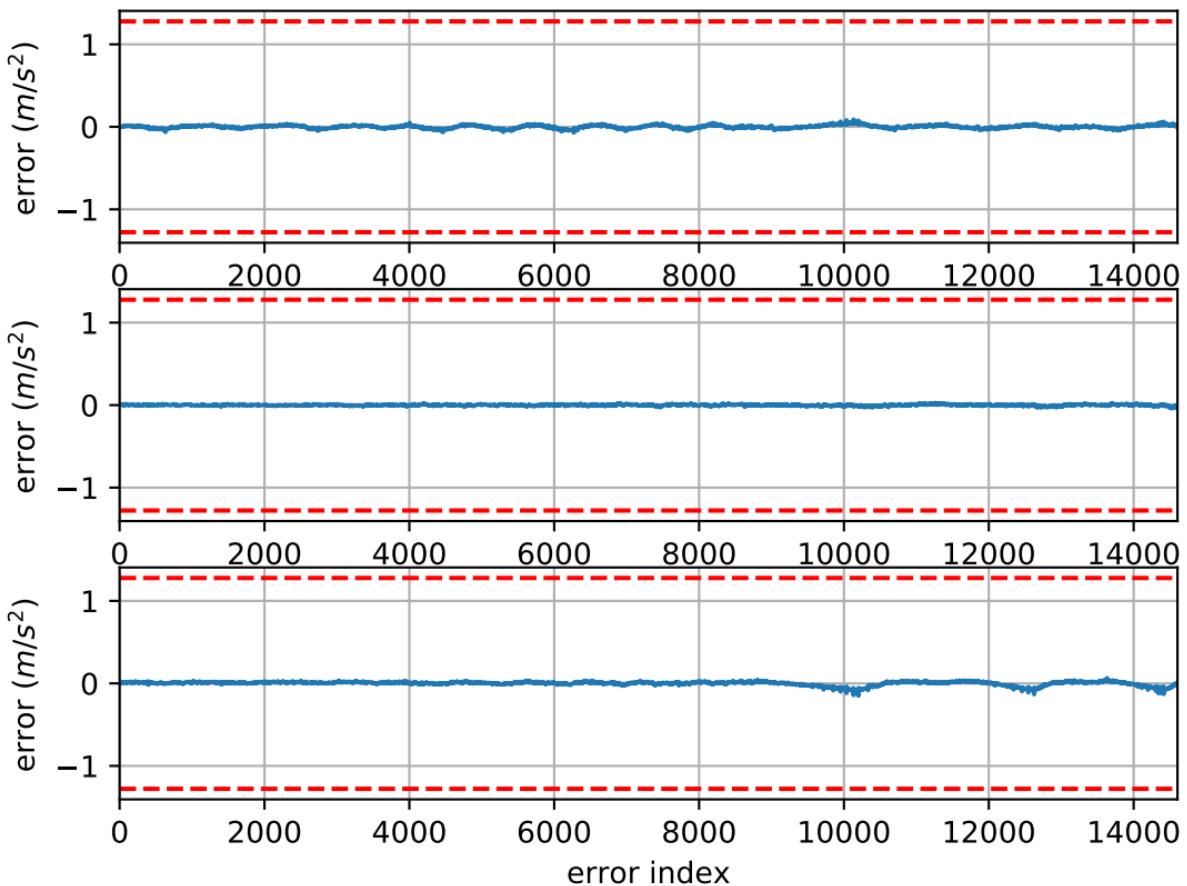
imu0: sample inertial rate



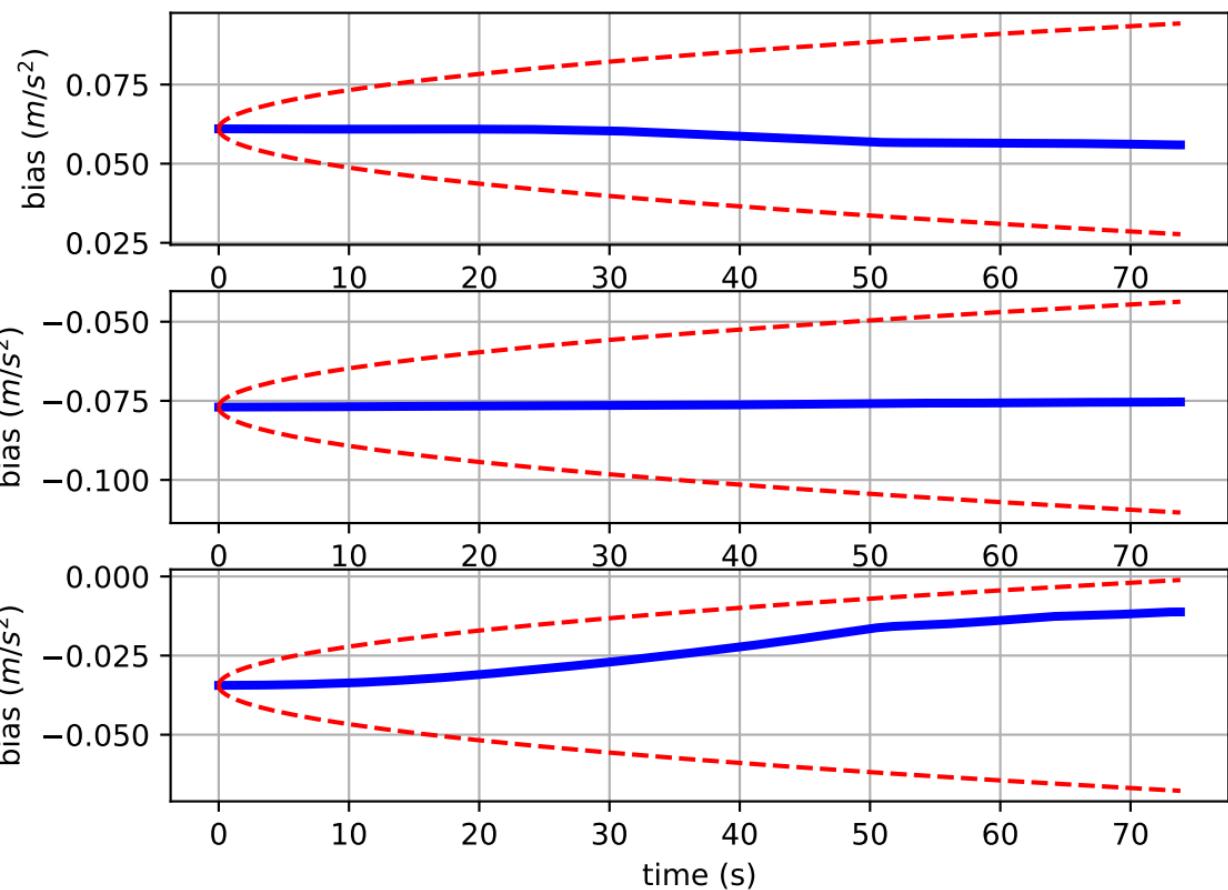
Comparison of predicted and measured specific force (imu0 frame)



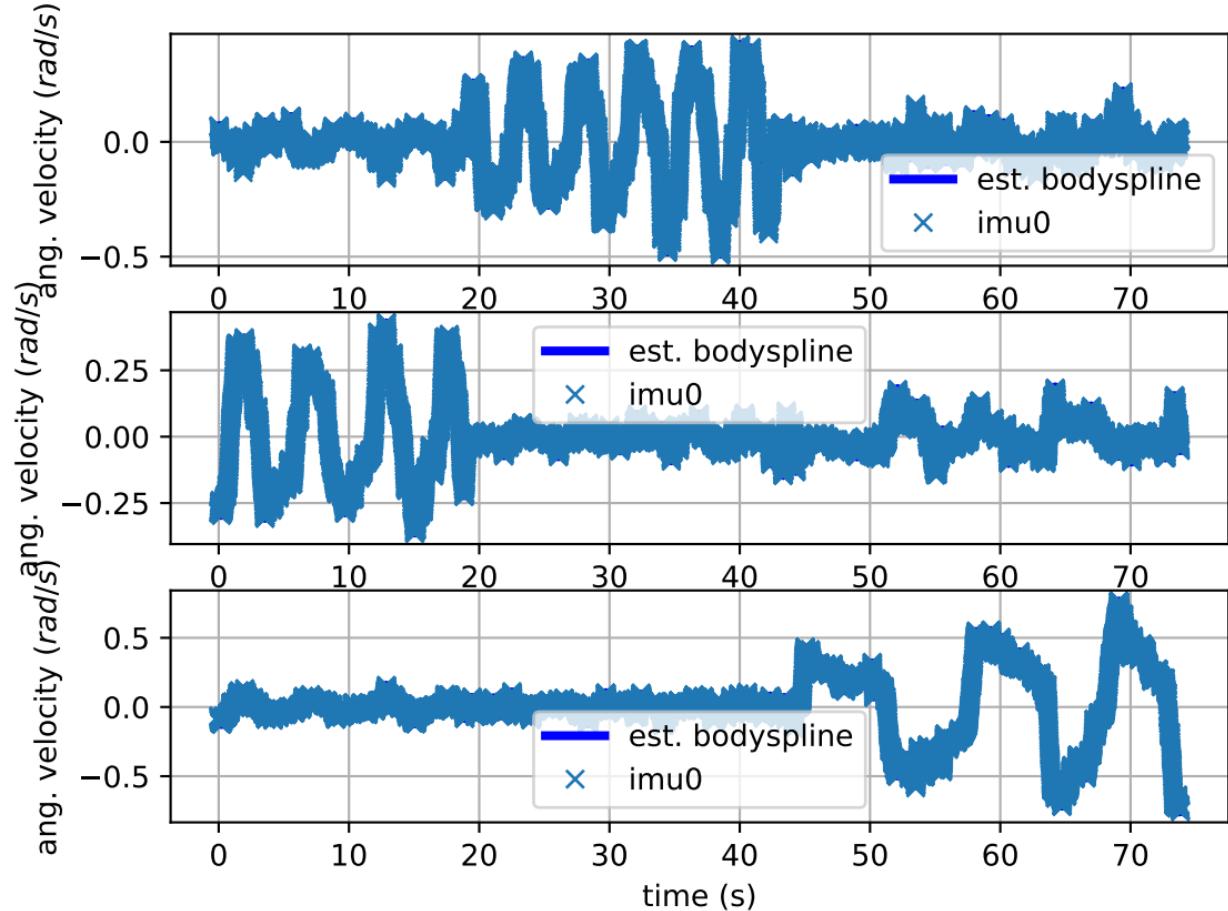
imu0: acceleration error



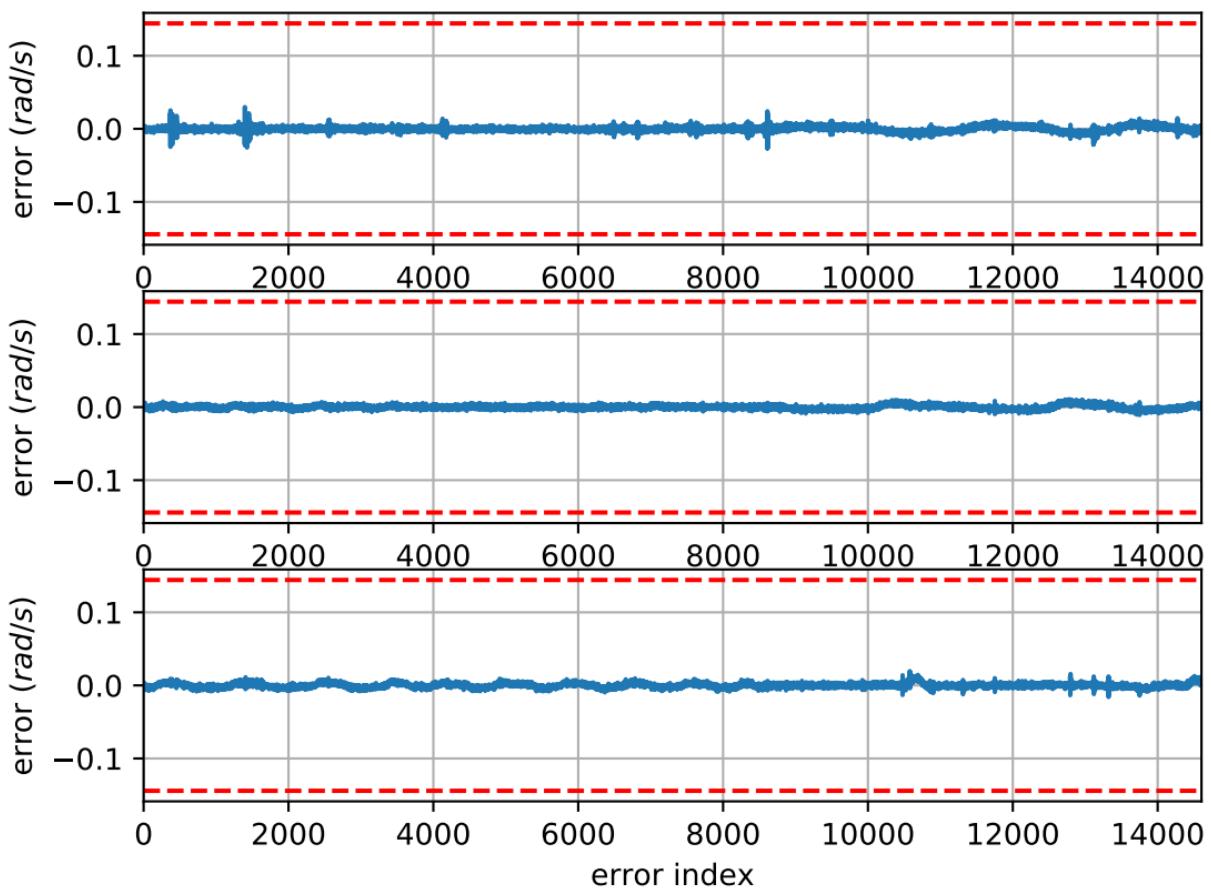
imu0: estimated accelerometer bias (imu frame)



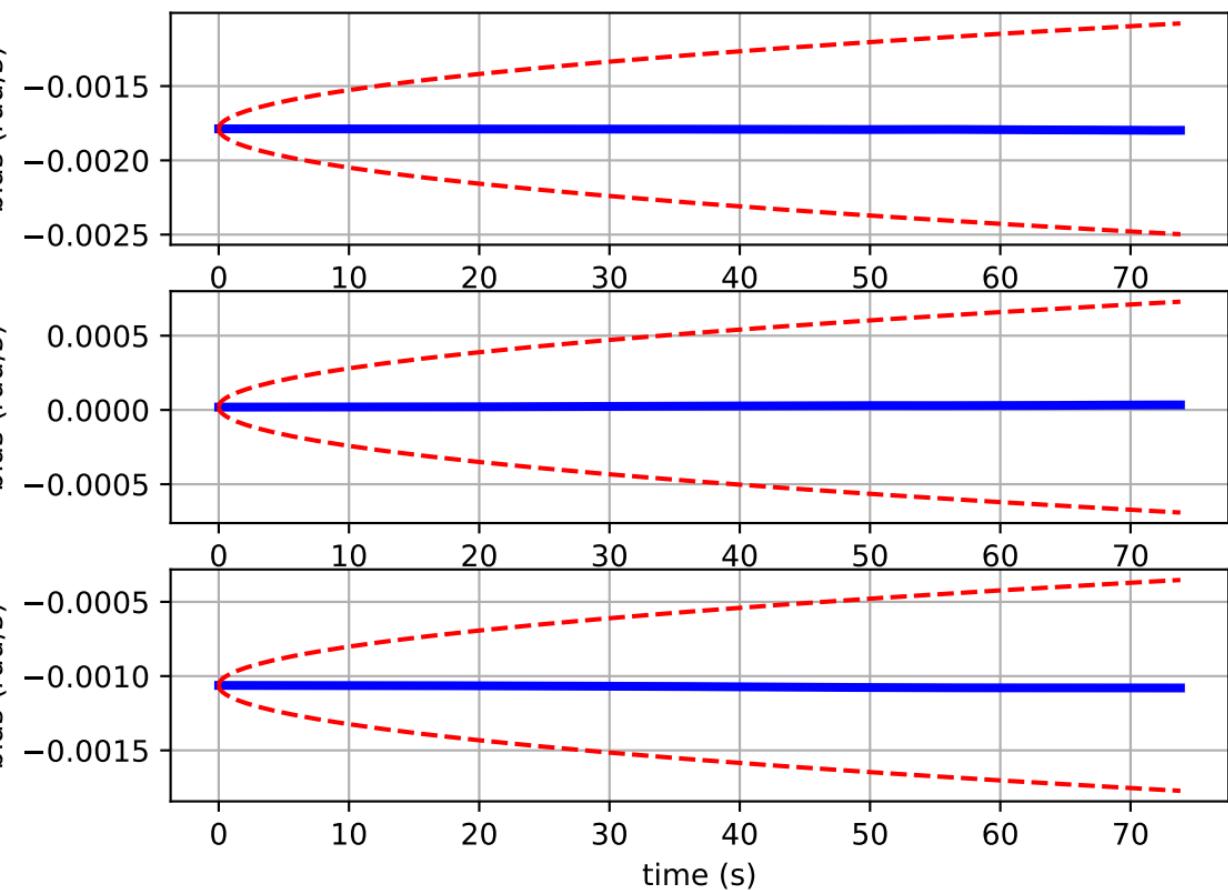
Comparison of predicted and measured angular velocities (body frame)



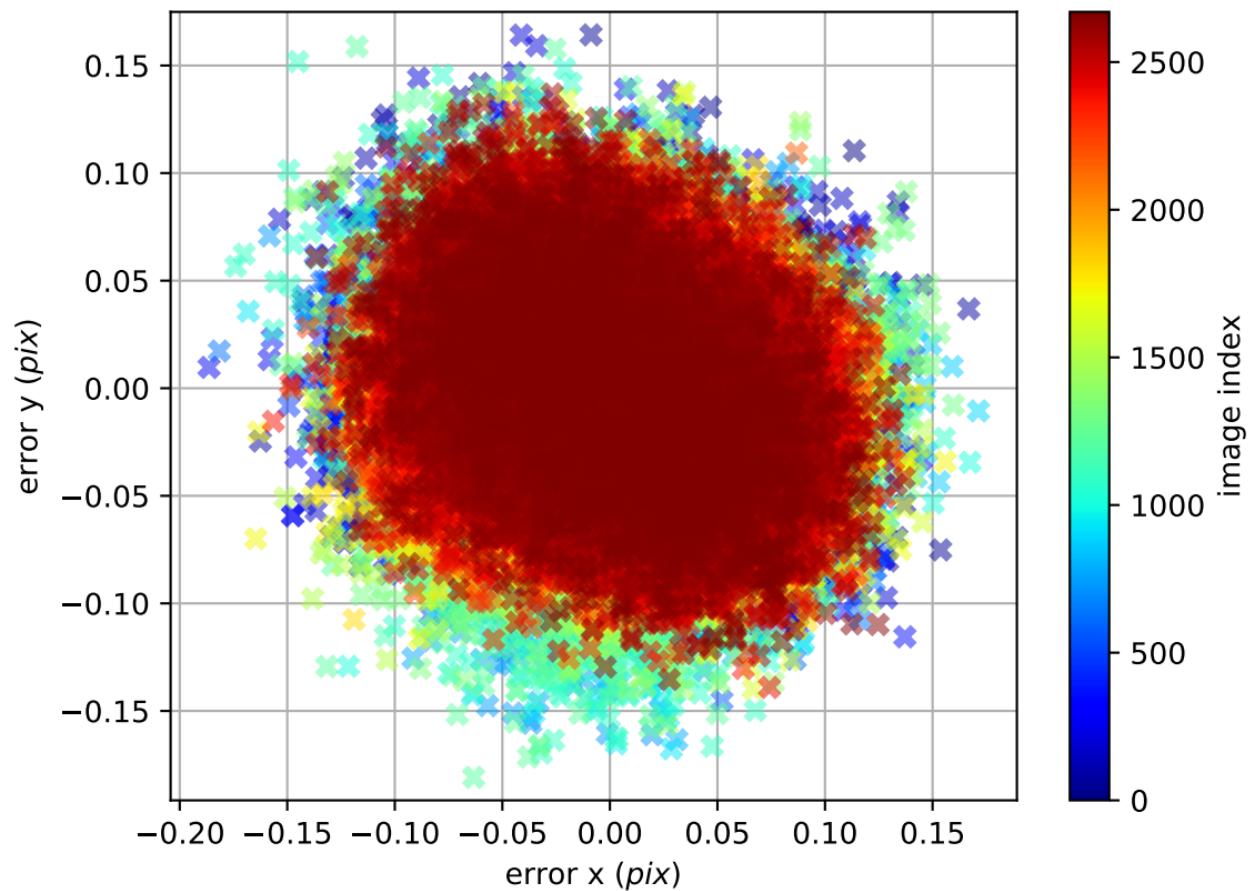
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

