

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.184930383931, median 0.135657577292, std: 0.258083566365
Reprojection error (cam1): mean 0.184909390598, median 0.144117497283, std: 0.2085910135
Gyroscope error (imu0): mean 1.02936950357, median 0.905328629059, std: 0.614222541162
Accelerometer error (imu0): mean 1.14240617458, median 0.990660624667, std: 0.767475566835

Residuals

Reprojection error (cam0) [px]: mean 0.184930383931, median 0.135657577292, std: 0.258083566365
Reprojection error (cam1) [px]: mean 0.184909390598, median 0.144117497283, std: 0.2085910135
Gyroscope error (imu0) [rad/s]: mean 0.00272224934463, median 0.00239421340791, std: 0.00162436025581
Accelerometer error (imu0) [m/s^2]: mean 0.0300502772885, median 0.0260587058547, std: 0.0201879630106

Transformation (cam0):

T_ci: (imu0 to cam0):
[[0.99991467 -0.01266646 0.00319732 -0.04079473]
 [0.01268472 0.99990298 -0.00575537 0.01066408]
 [-0.00312411 0.00579544 0.99997833 0.00820479]
 [0. 0. 0. 1.]]

T_ic: (cam0 to imu0):
[[0.99991467 0.01268472 -0.00312411 0.04068161]
 [-0.01266646 0.99990298 0.00579544 -0.01122732]
 [0.00319732 -0.00575537 0.99997833 -0.0080128]
 [0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
0.0

Transformation (cam1):

T_ci: (imu0 to cam1):
[[0.99989804 -0.01127285 -0.0087653 0.06901603]
 [0.01124262 0.99993071 -0.00349044 0.01075883]
 [0.00880404 0.00339154 0.99995549 0.0085896]]

```
[ 0.    0.    0.    1.   ]]
```

T_ic: (cam1 to imu0):

```
[[ 0.99989804  0.01124262  0.00880404 -0.06920557]
 [-0.01127285  0.99993071  0.00339154 -0.01000921]
 [-0.0087653  -0.00349044  0.99995549 -0.00794672]
 [ 0.    0.    0.    1.   ]]
```

timeshift cam1 to imu0: [s] ($t_{imu} = t_{cam} + \text{shift}$)
0.0

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99992748  0.00146212 -0.01195423  0.1098903 ]
 [-0.00143508  0.99999639  0.00226955  0.00001763]
 [ 0.0119575  -0.00225223  0.99992597  0.00089724]
 [ 0.    0.    0.    1.   ]]
```

baseline norm: 0.109893959626 [m]

Gravity vector in target coords: [m/s²]

```
[ 9.79327297  0.03948336 -0.50859462]
```

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [471.5828251357715, 471.9203812192671]

Principal point: [355.28953310993563, 230.30729598173446]

Distortion model: radtan

Distortion coefficients: [-0.30145968356676456, 0.097259709675039, -0.0002515019773675357, -0.0005624105020863163]

Type: checkerboard

Rows

Count: 9

Distance: 0.07 [m]

Cols

Count: 8
Distance: 0.07 [m]

cam1

Camera model: pinhole
Focal length: [470.22296585251604, 470.7484099620502]
Principal point: [386.44833354485814, 215.48329019718503]
Distortion model: radtan
Distortion coefficients: [-0.2981365045773221, 0.09247390110309113, -2.245287144452308e-05, -0.0005058184835257142]
Type: checkerboard
Rows
 Count: 9
 Distance: 0.07 [m]
Cols
 Count: 8
 Distance: 0.07 [m]

IMU configuration

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IMU0:

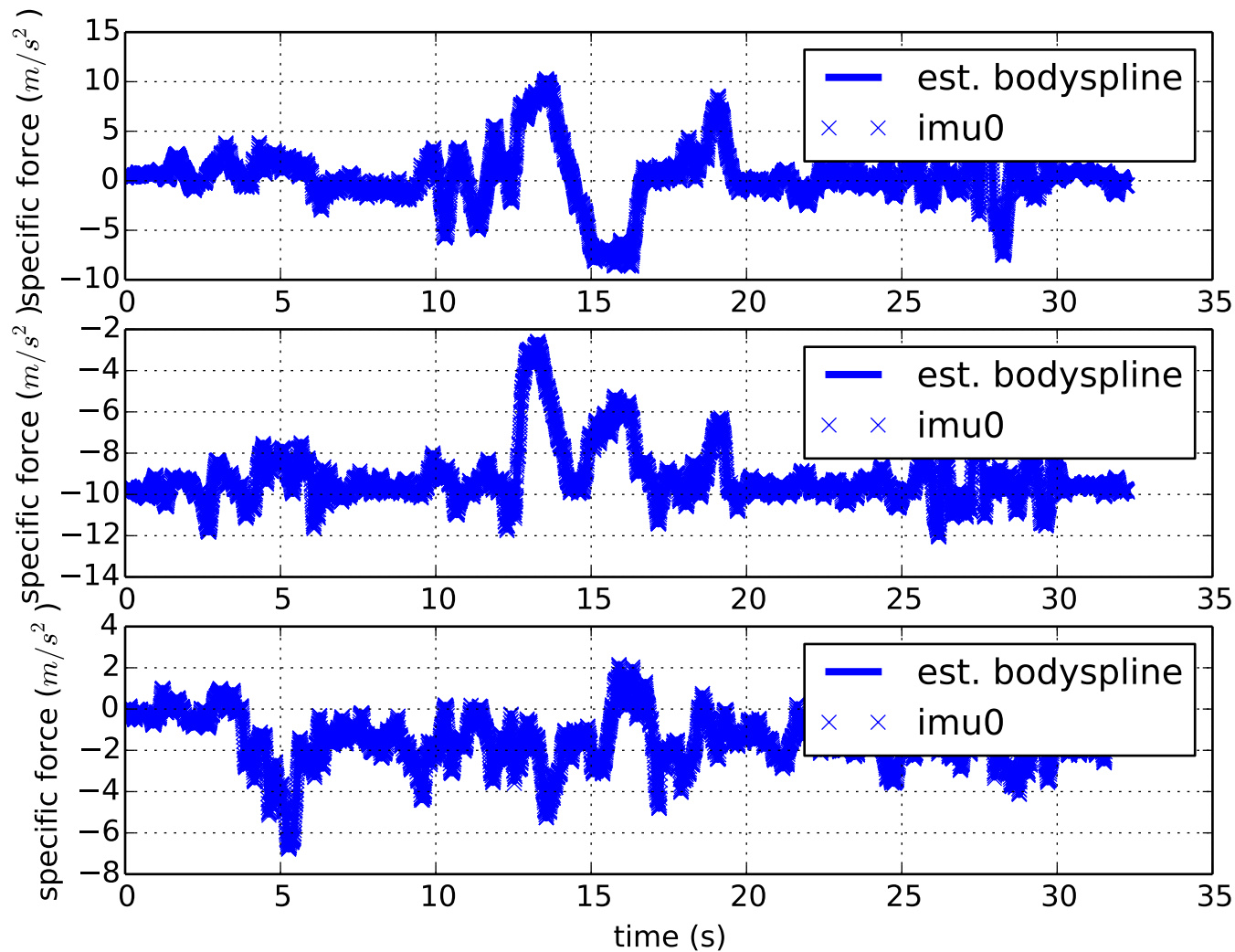
Model: calibrated
Update rate: 200.0
Accelerometer:
 Noise density: 0.00186
 Noise density (discrete): 0.0263043722601
 Random walk: 0.000433
Gyroscope:
 Noise density: 0.000187
 Noise density (discrete): 0.00264457936164
 Random walk: 2.66e-05

T_i_b
[[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]

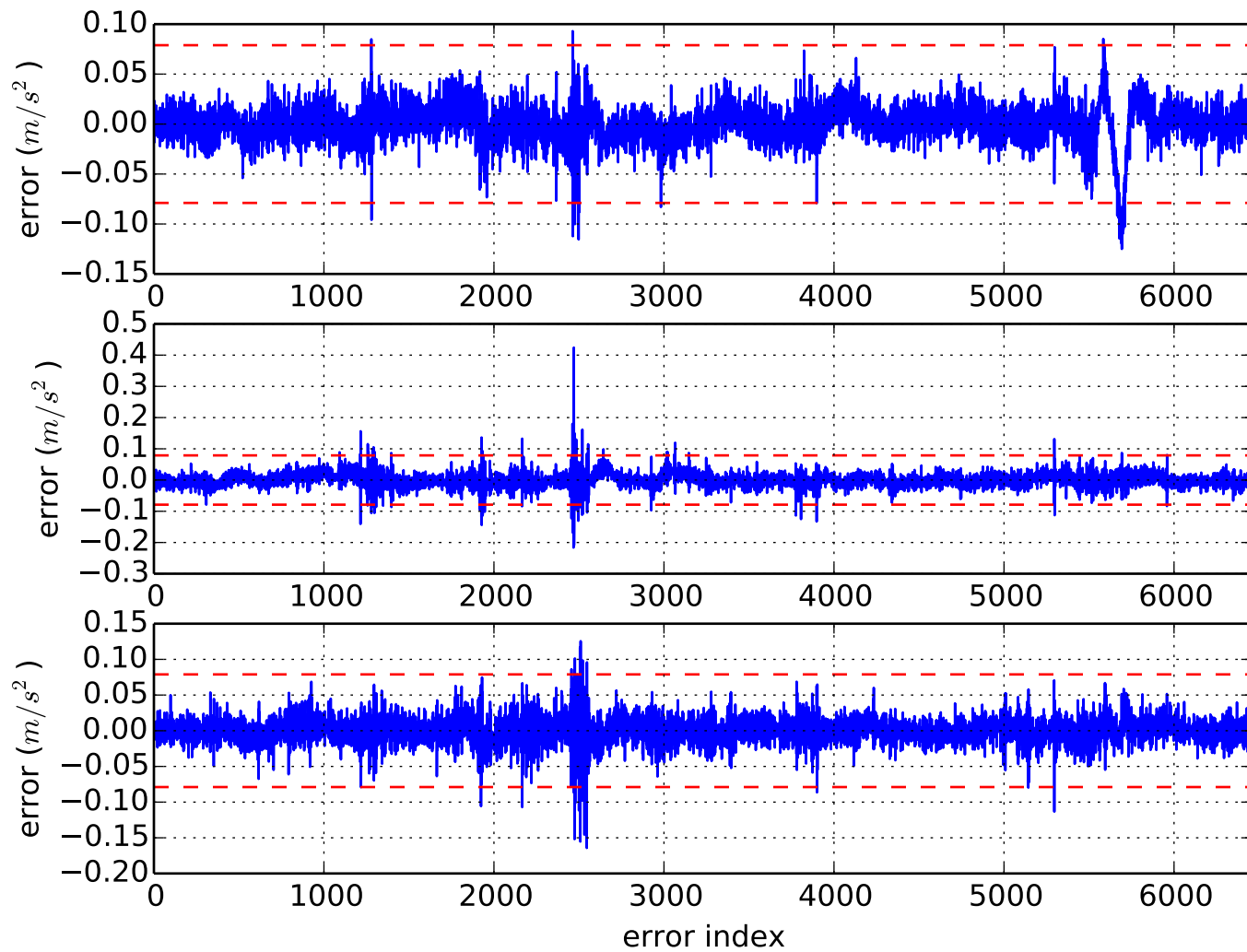
[0. 0. 0. 1.]

time offset with respect to IMU0: 0.0 [s]

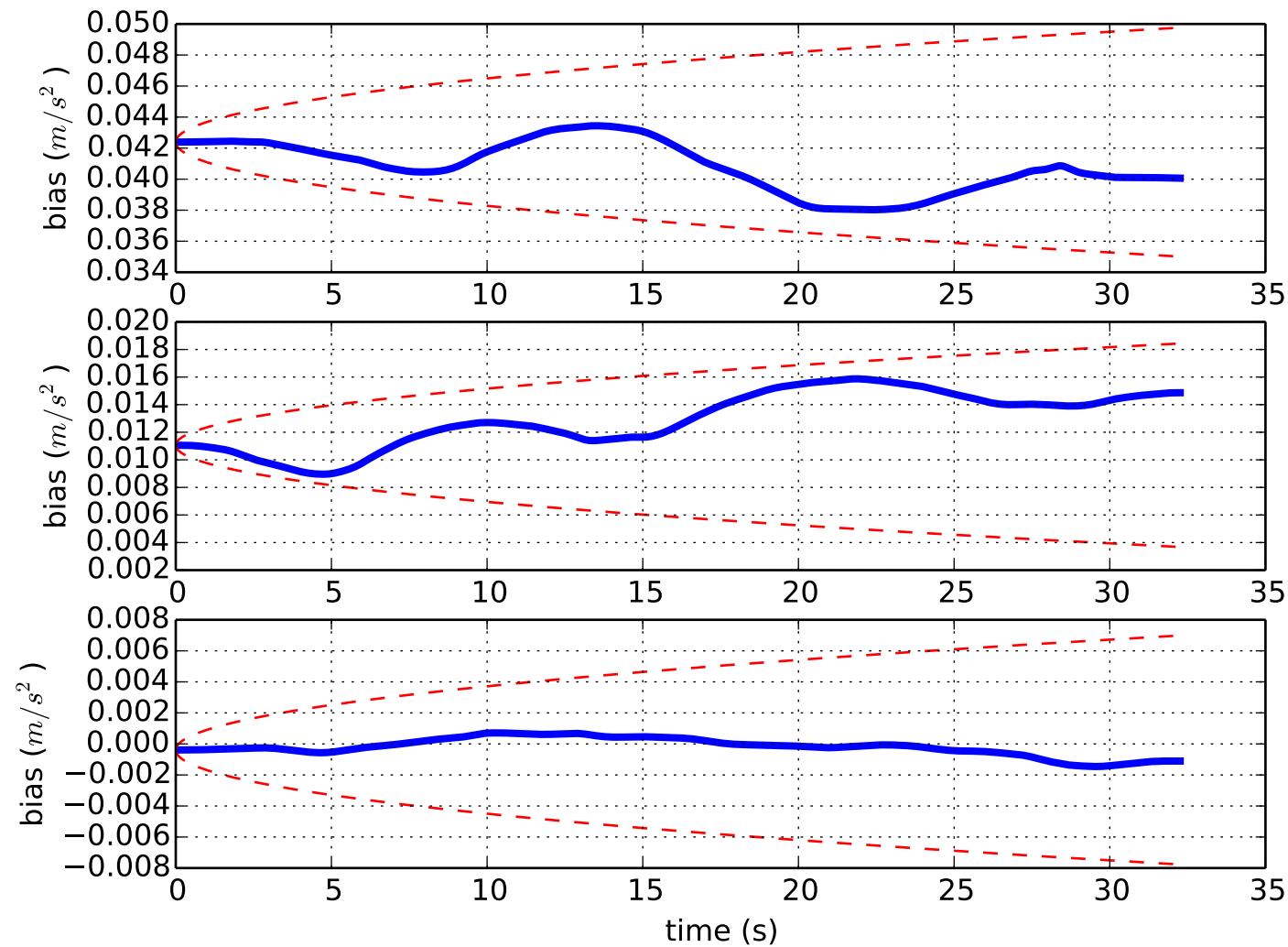
Comparison of predicted and measured specific force (imu0 frame)



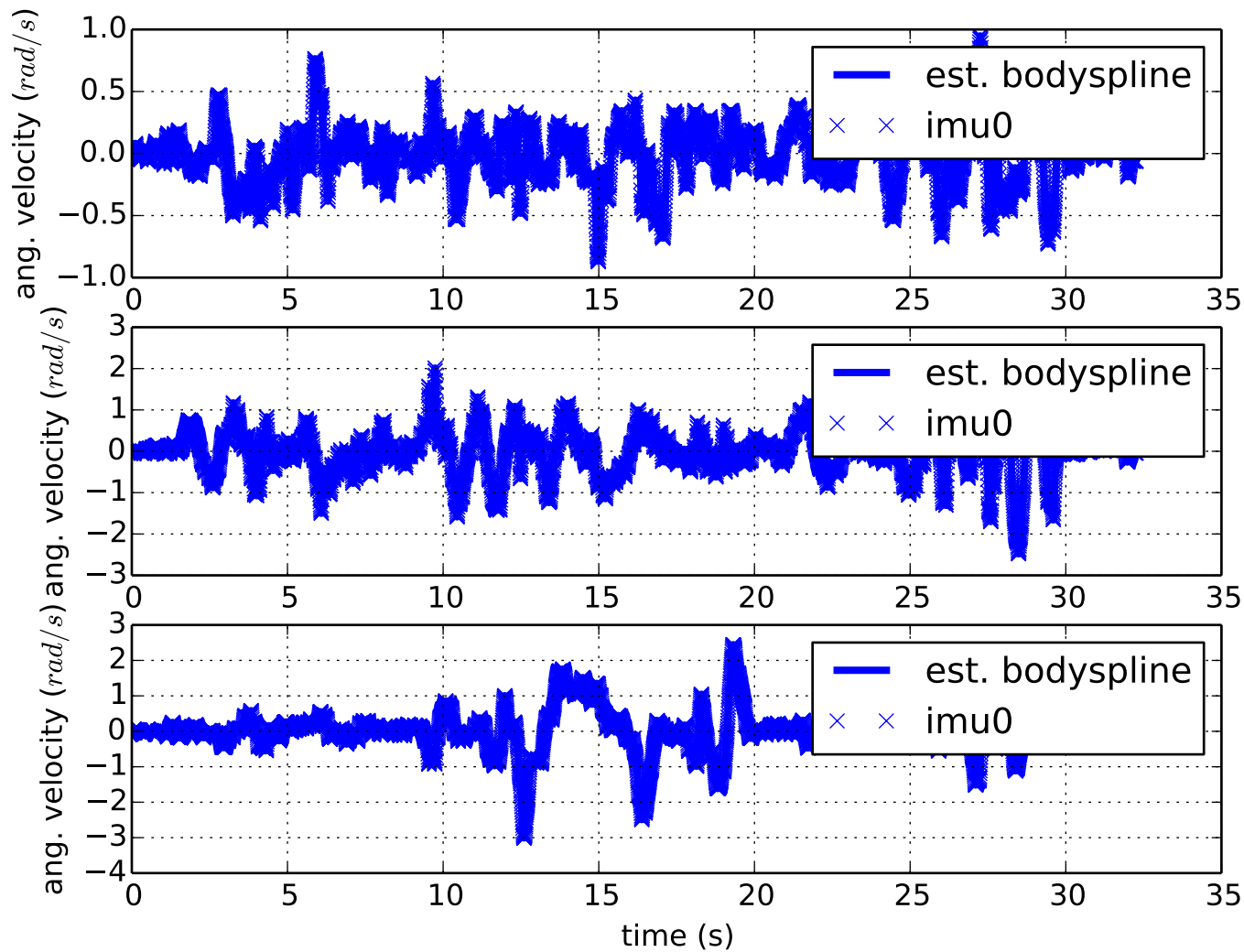
imu0: acceleration error



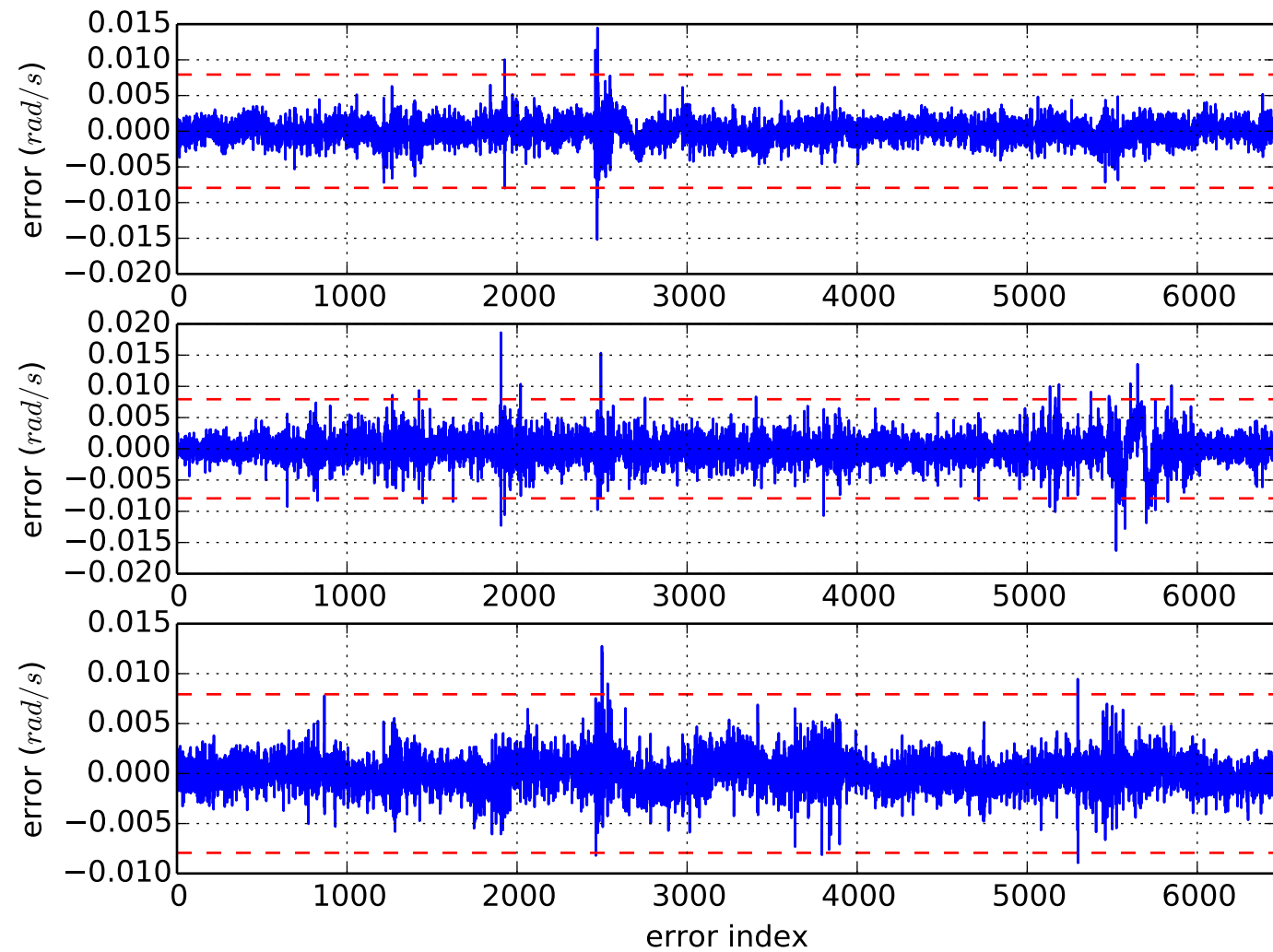
imu0: estimated accelerometer bias (imu frame)



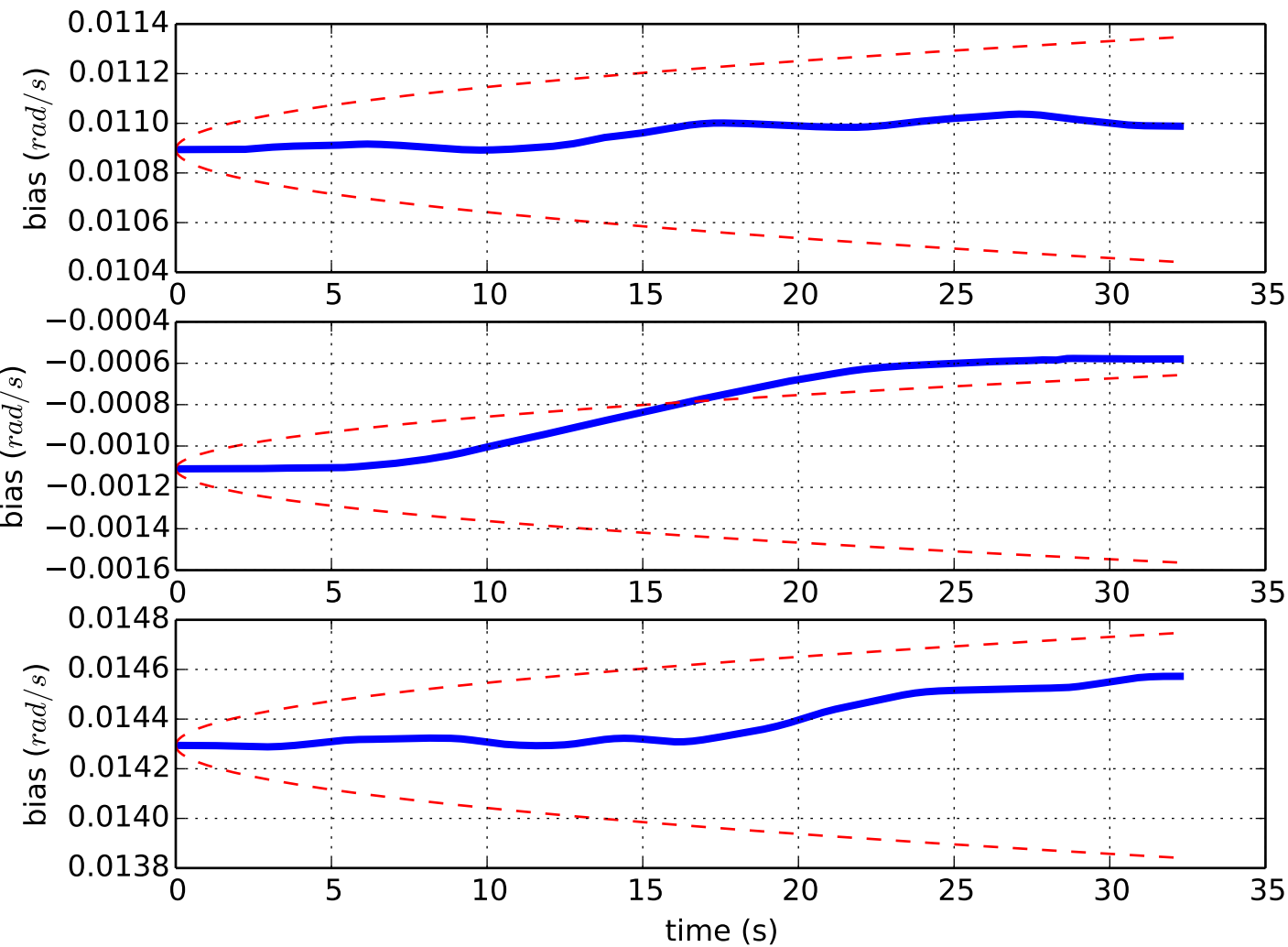
Comparison of predicted and measured angular velocities (body frame)



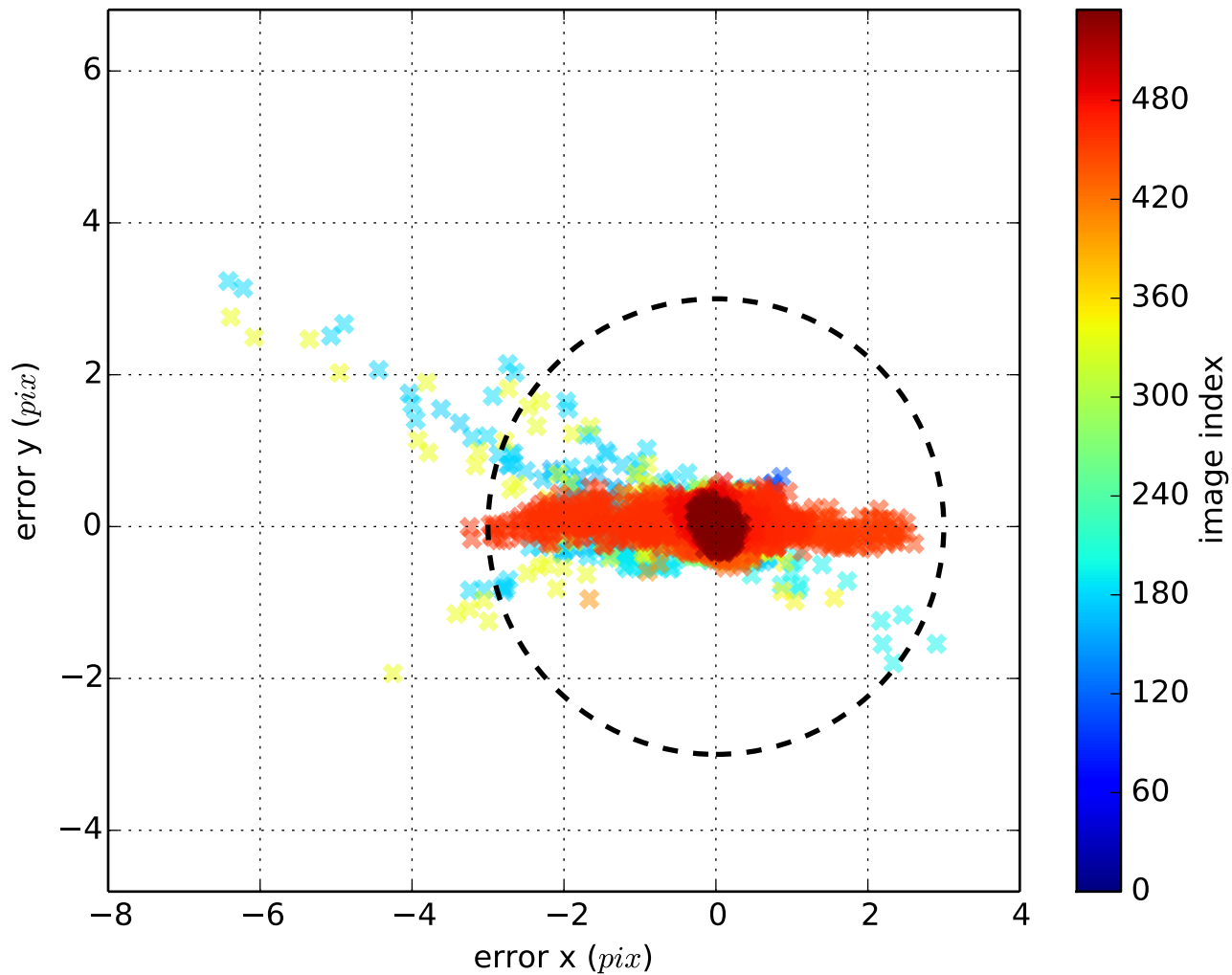
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

