

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.0842258483282, median 0.080108496819, std: 0.0419168046202
Reprojection error (cam1): mean 0.0838279238451, median 0.0804422743211, std: 0.0410548728371
Gyroscope error (imu0): mean 0.49218000053, median 0.456708851027, std: 0.260715778064
Accelerometer error (imu0): mean 0.58180835213, median 0.535441355746, std: 0.302133660318

Residuals

Reprojection error (cam0) [px]: mean 0.0842258483282, median 0.080108496819, std: 0.0419168046202
Reprojection error (cam1) [px]: mean 0.0838279238451, median 0.0804422743211, std: 0.0410548728371
Gyroscope error (imu0) [rad/s]: mean 0.00111367621101, median 0.00103341416188, std: 0.00058993246282
Accelerometer error (imu0) [m/s^2]: mean 0.0230384353439, median 0.0212023959602, std: 0.011963882562

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ -0.99954103  0.02909008 -0.00845573  0.04810933]
 [  0.00742088 -0.03549975 -0.99934213 -0.04637558]
 [ -0.02937112 -0.99894621  0.03526759 -0.06803062]
 [  0.          0.          0.          1.         ]]
```

T_ic: (cam0 to imu0):

```
[[ -0.99954103  0.00742088 -0.02937112  0.04643326]
 [  0.02909008 -0.03549975 -0.99894621 -0.07100475]
 [ -0.00845573 -0.99934213  0.03526759 -0.04353899]
 [  0.          0.          0.          1.         ]]
```

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

0.0

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[[ -0.99953253  0.02959026 -0.00769007 -0.05280111]
 [  0.008028   0.01131859 -0.99990372 -0.04403772]
 [ -0.02950037 -0.99949803 -0.01155084 -0.07119828]
```

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

T_ic: (cam1 to imu0):

```
[[-0.99953253  0.008028 -0.02950037 -0.05452327]
 [ 0.02959026  0.01131859 -0.99949803 -0.06910169]
 [-0.00769007 -0.99990372 -0.01155084 -0.04526192]
 [ 0.    0.    0.    1.   ]]
```

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
0.0

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99999958 -0.00078285 -0.00047291 -0.1009789 ]
 [ 0.00075986  0.99890368 -0.04680664 -0.00093382]
 [ 0.00050903  0.04680626  0.99890386 -0.00109605]
 [ 0.    0.    0.    1.   ]]
```

baseline norm: 0.100989162681 [m]

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

```
[ 0.03358094 -9.69472857 -1.47632424]
```

Calibration configuration

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cam0

Camera model: omni

Focal length: [532.6269399206878, 532.5382548184712]

Principal point: [254.64725268304747, 256.5208017598656]

Omni xi: 1.78824252547

Distortion model: radtan

Distortion coefficients: [-0.06151726607493939, 0.1717502441330685, 0.0006675856418800371, 0.0005588611571243459]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.088 [m]
Spacing 0.0264 [m]

cam1

Camera model: omni
Focal length: [528.9846581114687, 528.8941903684859]
Principal point: [252.2588176170663, 254.17684019034238]
Omni xi: 1.77798876445
Distortion model: radtan
Distortion coefficients: [-0.05927483912320257, 0.1616359564373235, 0.0016262744293187663, 0.00061677618460397]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.088 [m]
 Spacing 0.0264 [m]

IMU configuration
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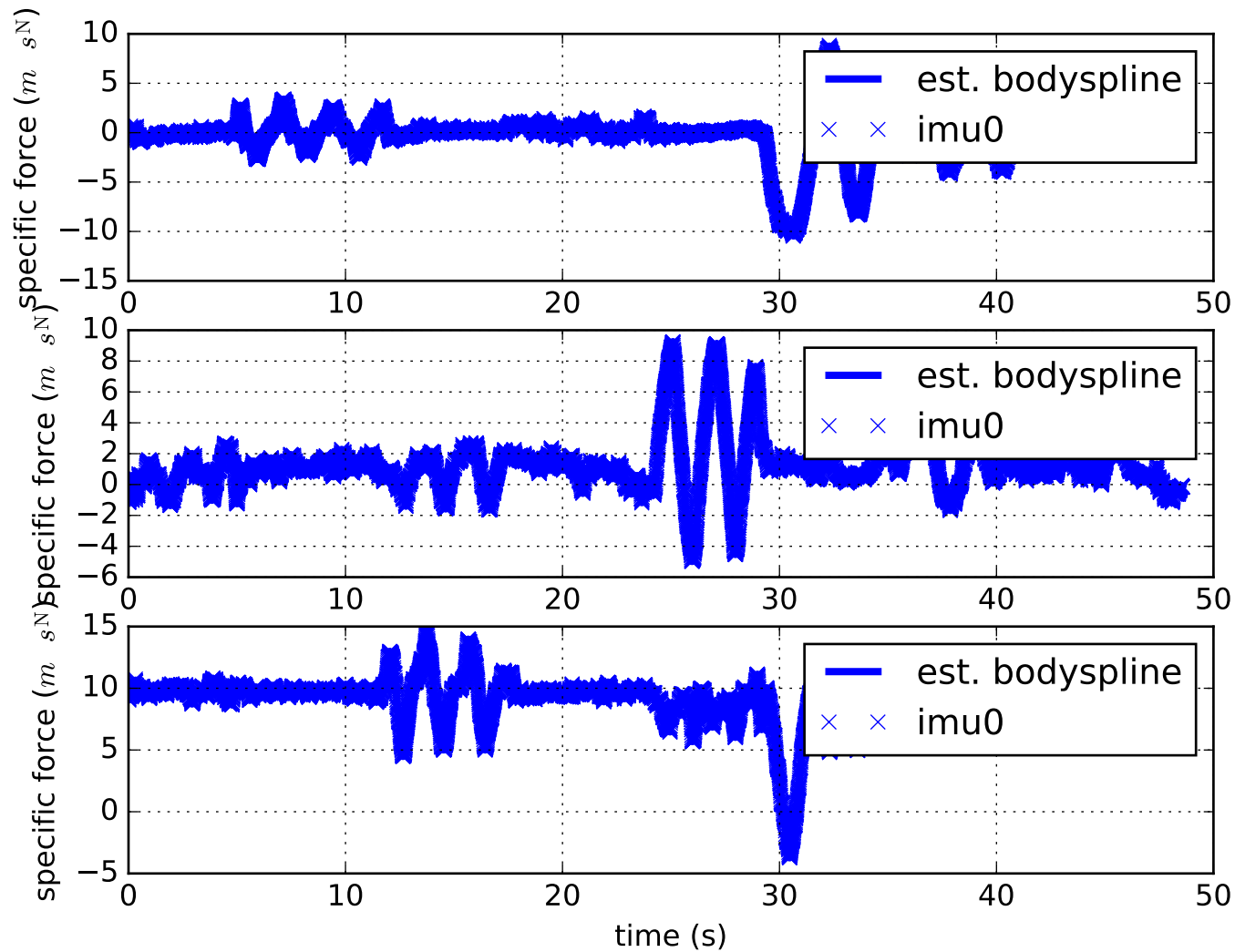
IMU0:

Model: calibrated
Update rate: 200.0
Accelerometer:
 Noise density: 0.0028
 Noise density (discrete): 0.0395979797464
 Random walk: 0.00086
Gyroscope:
 Noise density: 0.00016
 Noise density (discrete): 0.0022627416998
 Random walk: 2.2e-05
T_i_b
 [[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]

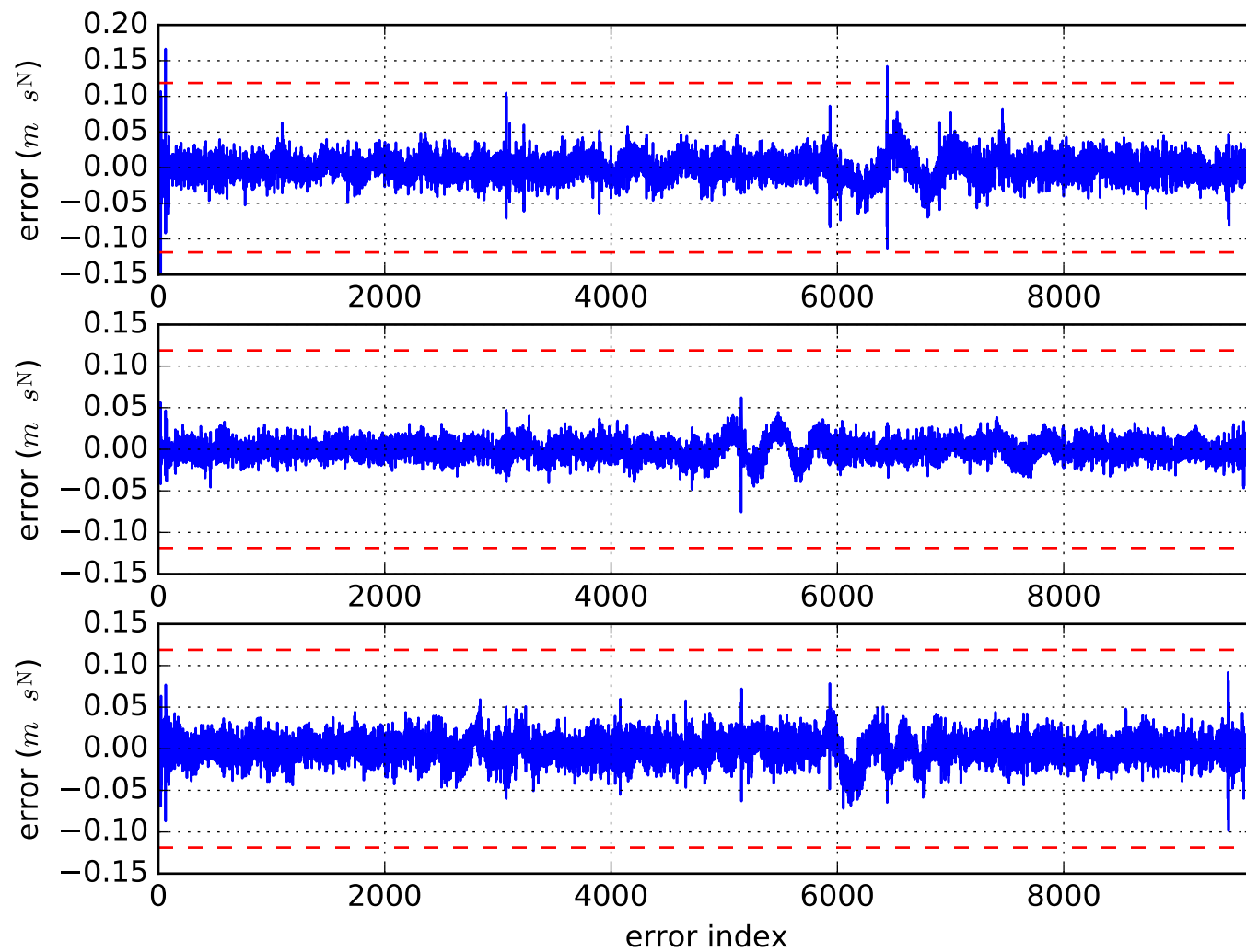
[0. 0. 0. 1.]

time offset with respect to IMU0: 0.0 [s]

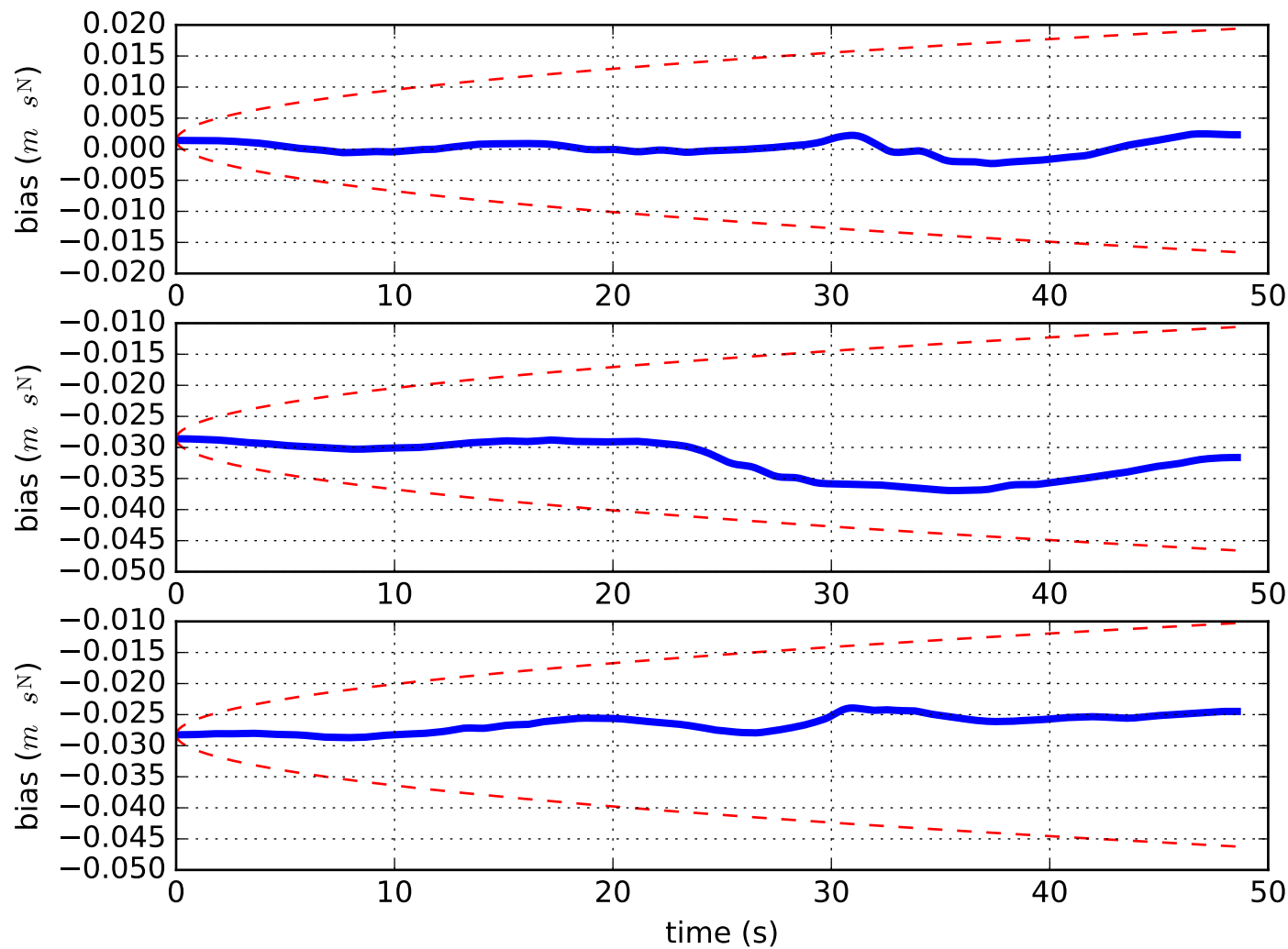
Comparison of predicted and measured specific force (imu0 frame)



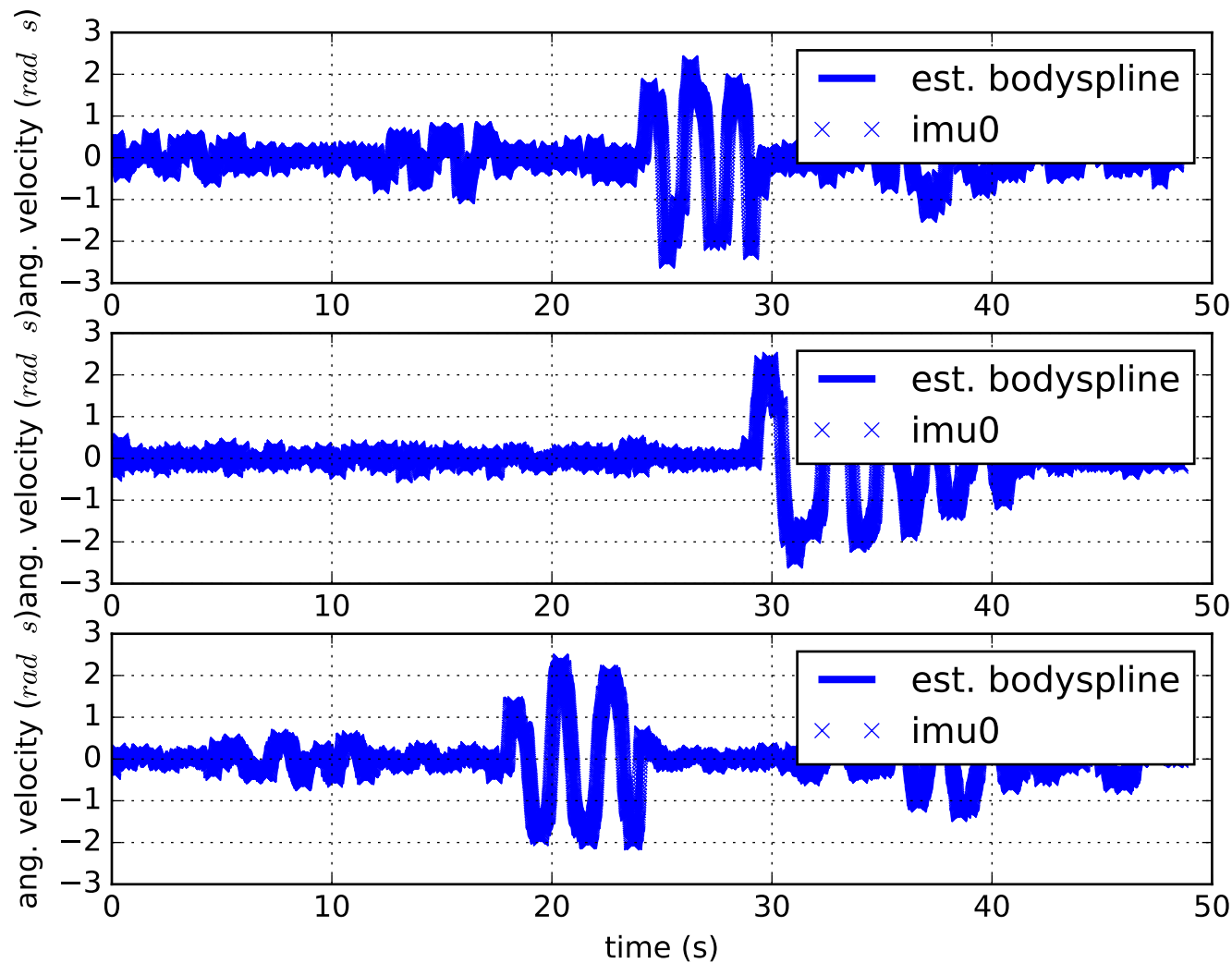
imu0: acceleration error



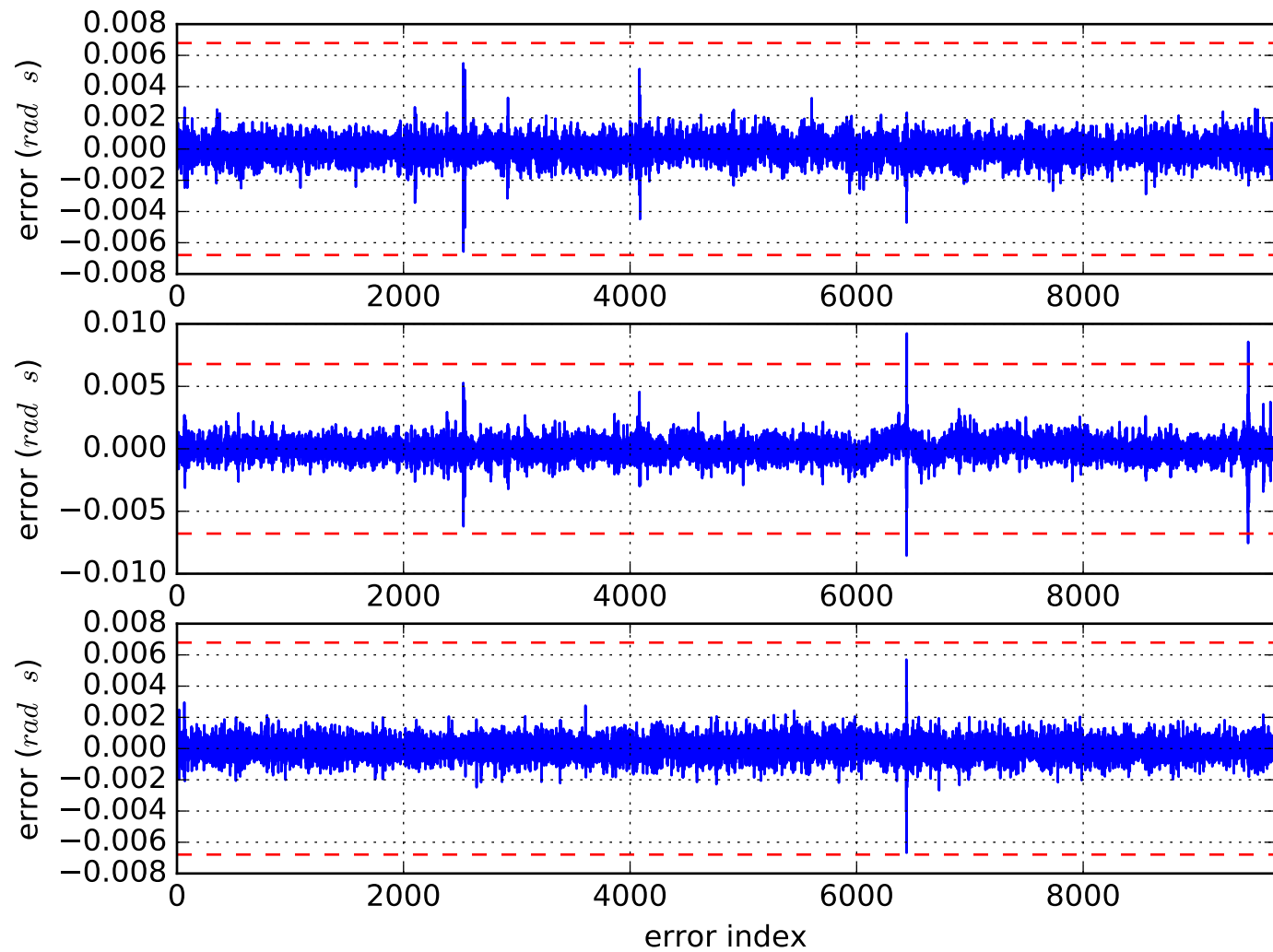
imu0: estimated accelerometer bias (imu frame)



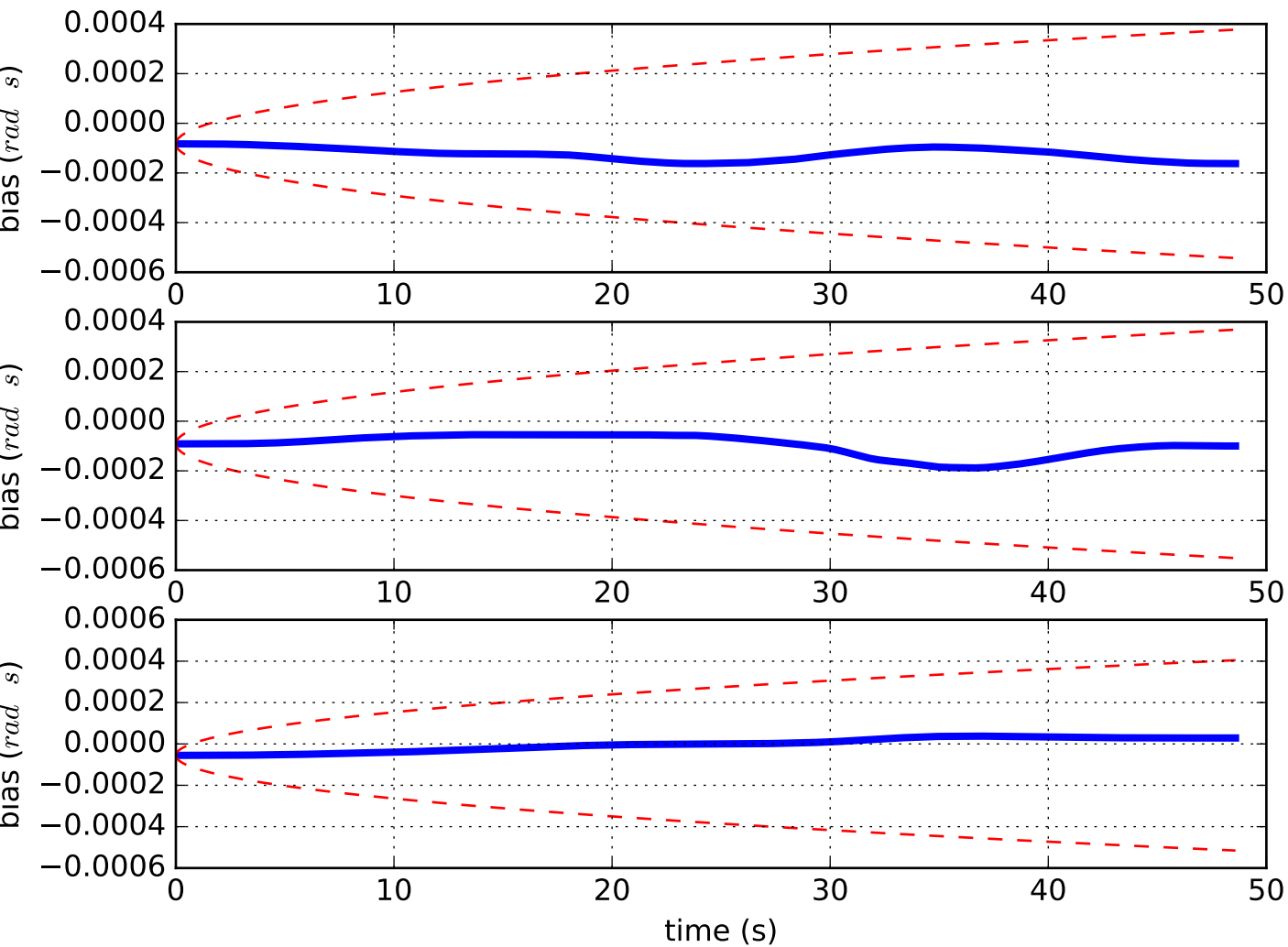
Comparison of predicted and measured angular velocities (body frame)



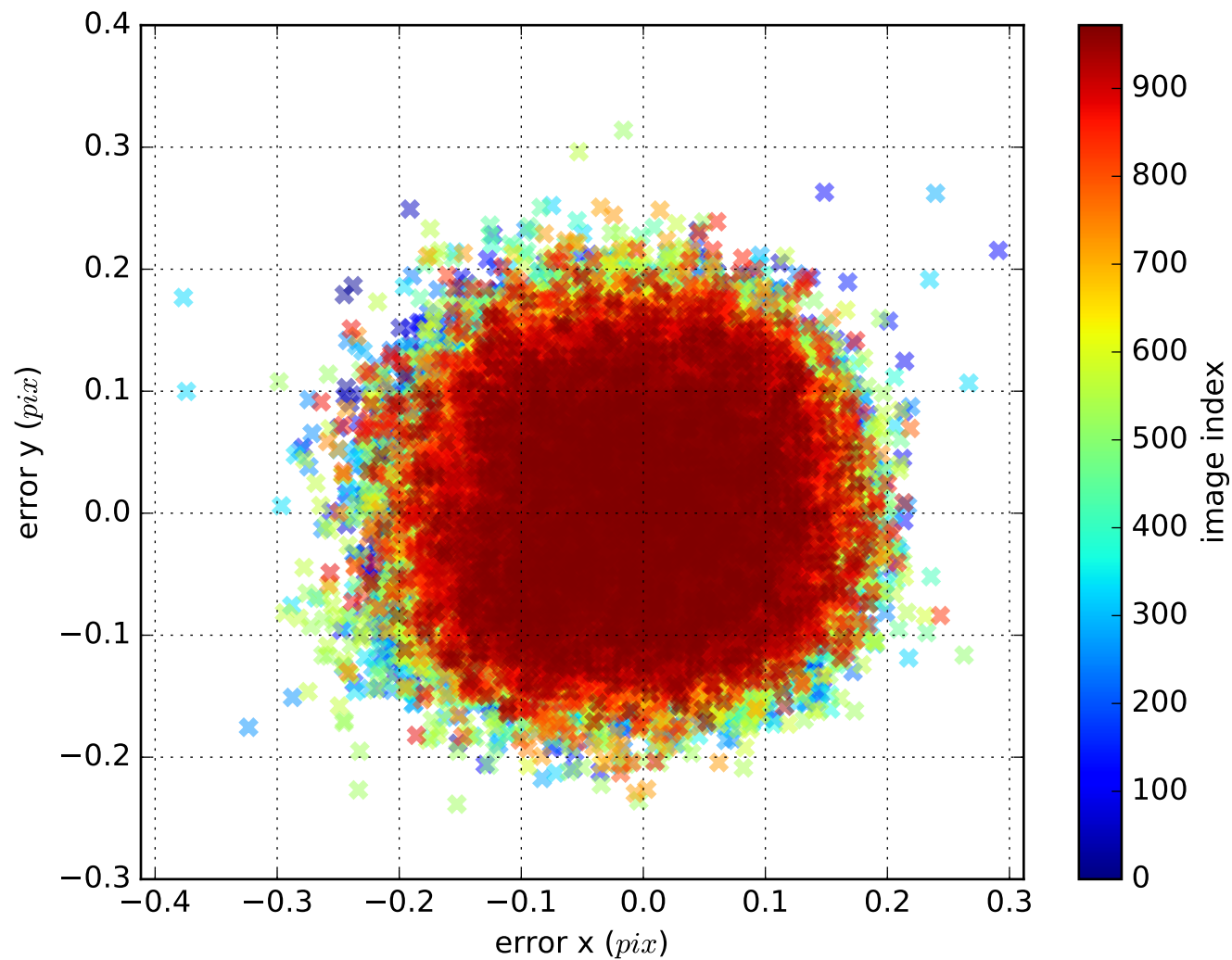
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

