

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.0842759101195, median 0.0801693902929, std: 0.0419475003781
Reprojection error (cam1): mean 0.0838035746531, median 0.0804217714097, std: 0.0410214785366
Gyroscope error (imu0): mean 0.492184164438, median 0.457102562291, std: 0.26071300967
Accelerometer error (imu0): mean 0.581812475391, median 0.535344961463, std: 0.302125871777

Residuals

Reprojection error (cam0) [px]: mean 0.0842759101195, median 0.0801693902929, std: 0.0419475003781
Reprojection error (cam1) [px]: mean 0.0838035746531, median 0.0804217714097, std: 0.0410214785366
Gyroscope error (imu0) [rad/s]: mean 0.00111368563285, median 0.00103430502878, std: 0.000589926198659
Accelerometer error (imu0) [m/s^2]: mean 0.0230385986168, median 0.0211985789414, std: 0.0119635741515

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ -0.99954072  0.02910045 -0.00845616  0.04812531]
 [  0.00741901 -0.03556579 -0.9993398  -0.04626899]
 [ -0.02938199 -0.99894356  0.03533356 -0.06808129]
 [  0.          0.          0.          1.         ]]
```

T_ic: (cam0 to imu0):

```
[[ -0.99954072  0.00741901 -0.02938199  0.04644611]
 [  0.02910045 -0.03556579 -0.99894356 -0.07105542]
 [ -0.00845616 -0.9993398  0.03533356 -0.04342594]
 [  0.          0.          0.          1.         ]]
```

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

0.0

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[[ -0.99953336  0.02956376 -0.0076848  -0.05277684]
 [  0.00802045  0.01125166 -0.99990453 -0.04396773]
 [ -0.02947447 -0.99949957 -0.01148352 -0.07119504]
```

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

T_ic: (cam1 to imu0):

```
[[-0.99953336  0.00802045 -0.02947447 -0.054498 ]
 [ 0.02956376  0.01125166 -0.99949957 -0.06910442]
 [-0.0076848  -0.99990453 -0.01148352 -0.04518668]
 [ 0.      0.      0.      1.    ]]
```

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

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.9999996 -0.00078728 -0.00043578 -0.10096822]
 [ 0.00076602  0.99890372 -0.04680561 -0.00097291]
 [ 0.00047215  0.04680526  0.99890392 -0.00104547]
 [ 0.      0.      0.      1.    ]]
```

baseline norm: 0.100978323943 [m]

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

```
[ 0.03358057 -9.69475866 -1.47612662]
```

Calibration configuration

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cam0

Camera model: omni

Focal length: [533.340727445877, 533.2556495307942]

Principal point: [254.64689387916482, 256.4835490935692]

Omni xi: 1.7921879013

Distortion model: radtan

Distortion coefficients: [-0.05972430882700243, 0.17468739202093328, 0.000737218969875311, 0.000574074894976456]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.088 [m]
Spacing 0.0264 [m]

cam1

Camera model: omni
Focal length: [520.2546241208013, 520.1799003708908]
Principal point: [252.24978846121377, 254.15045097300418]
Omni xi: 1.73241756065
Distortion model: radtan
Distortion coefficients: [-0.07693518083211431, 0.12590335598238764, 0.0016421936053305271, 0.0006230553630283544]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.088 [m]
 Spacing 0.0264 [m]

IMU configuration

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IMU0:

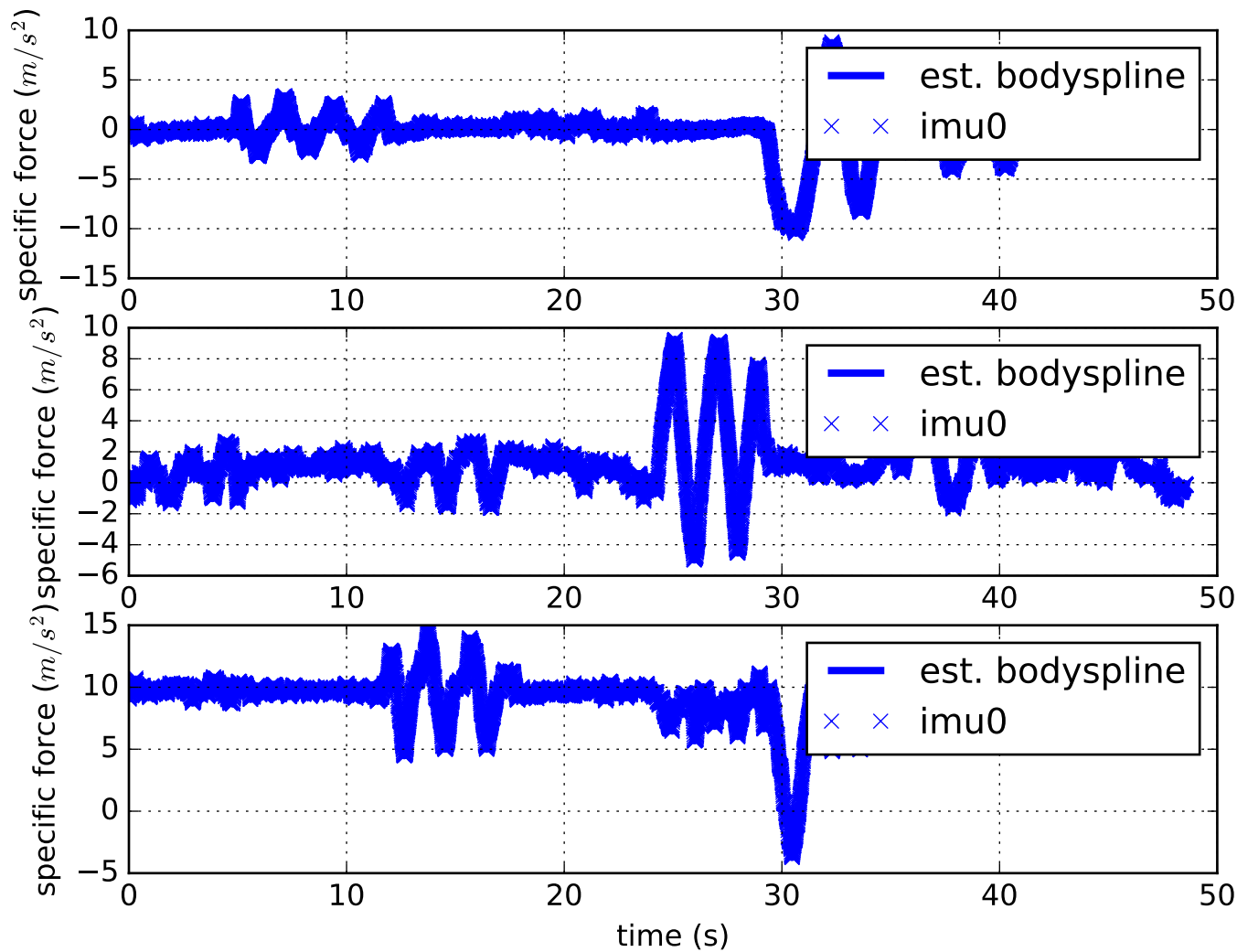
Model: calibrated
Update rate: 200.0
Accelerometer:
 Noise density: 0.0028
 Noise density (discrete): 0.0395979797464
 Random walk: 0.00086
Gyroscope:
 Noise density: 0.00016
 Noise density (discrete): 0.0022627416998
 Random walk: 2.2e-05

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

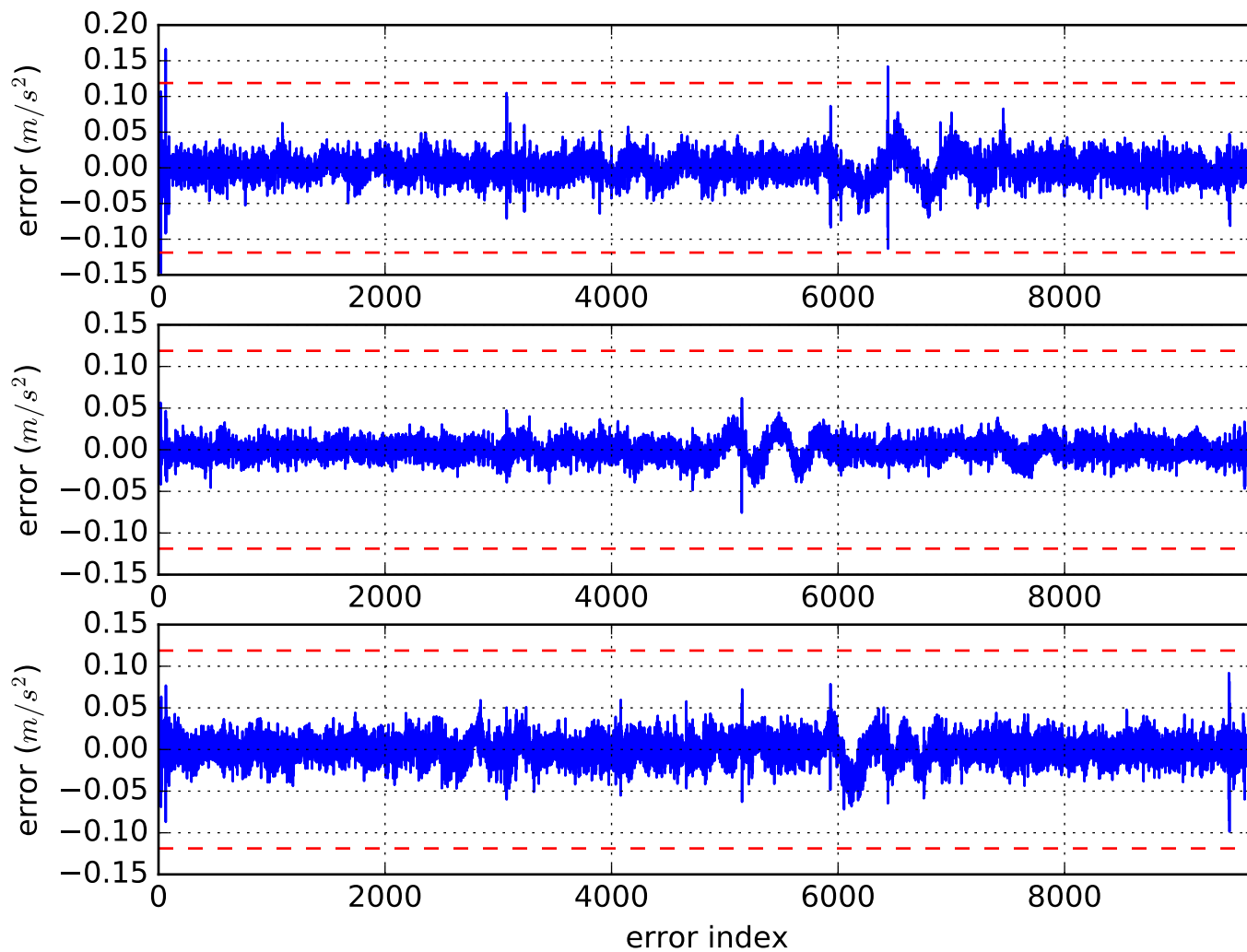
[0. 0. 0. 1.]

time offset with respect to IMU0: 0.0 [s]

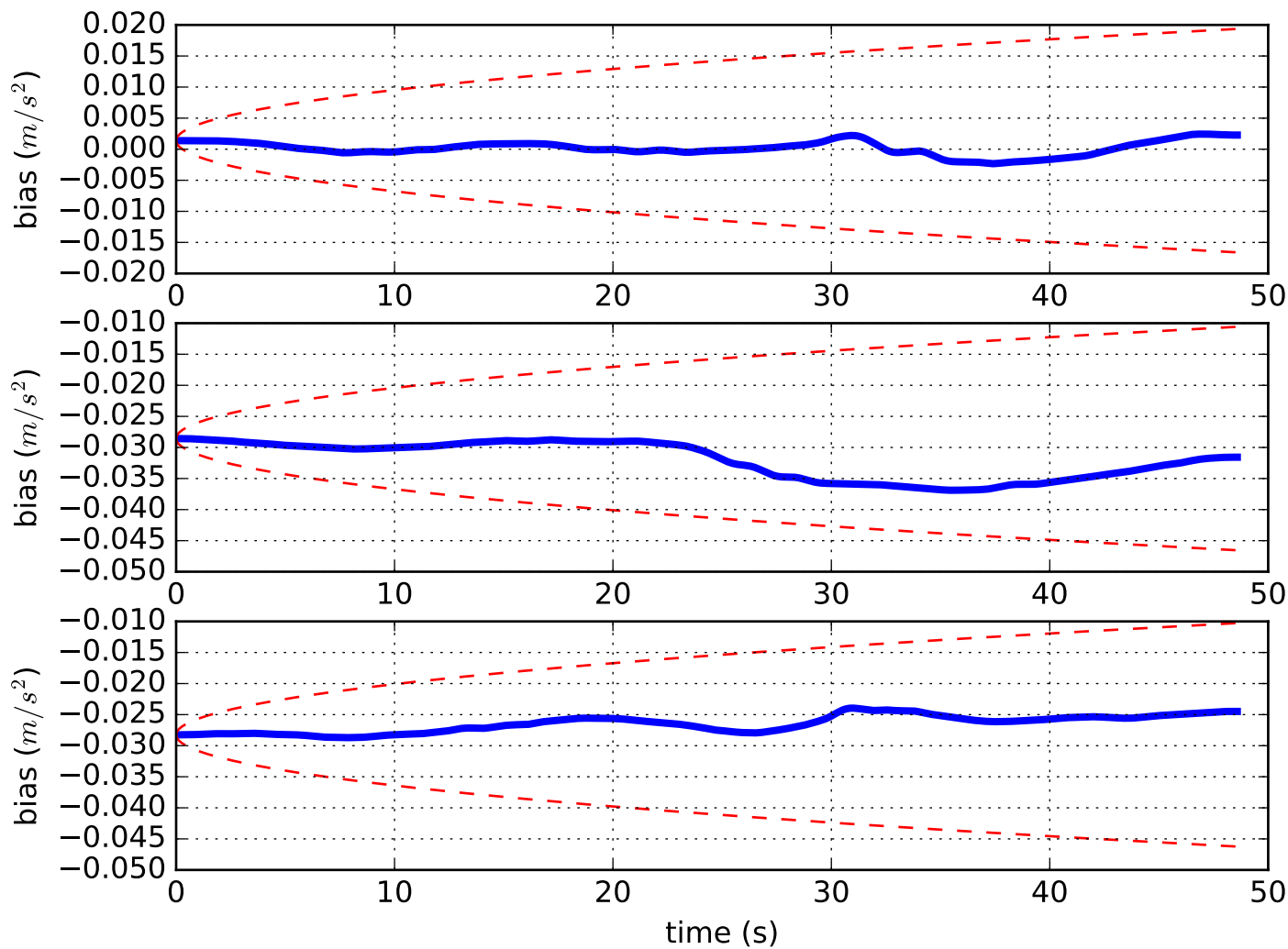
Comparison of predicted and measured specific force (imu0 frame)



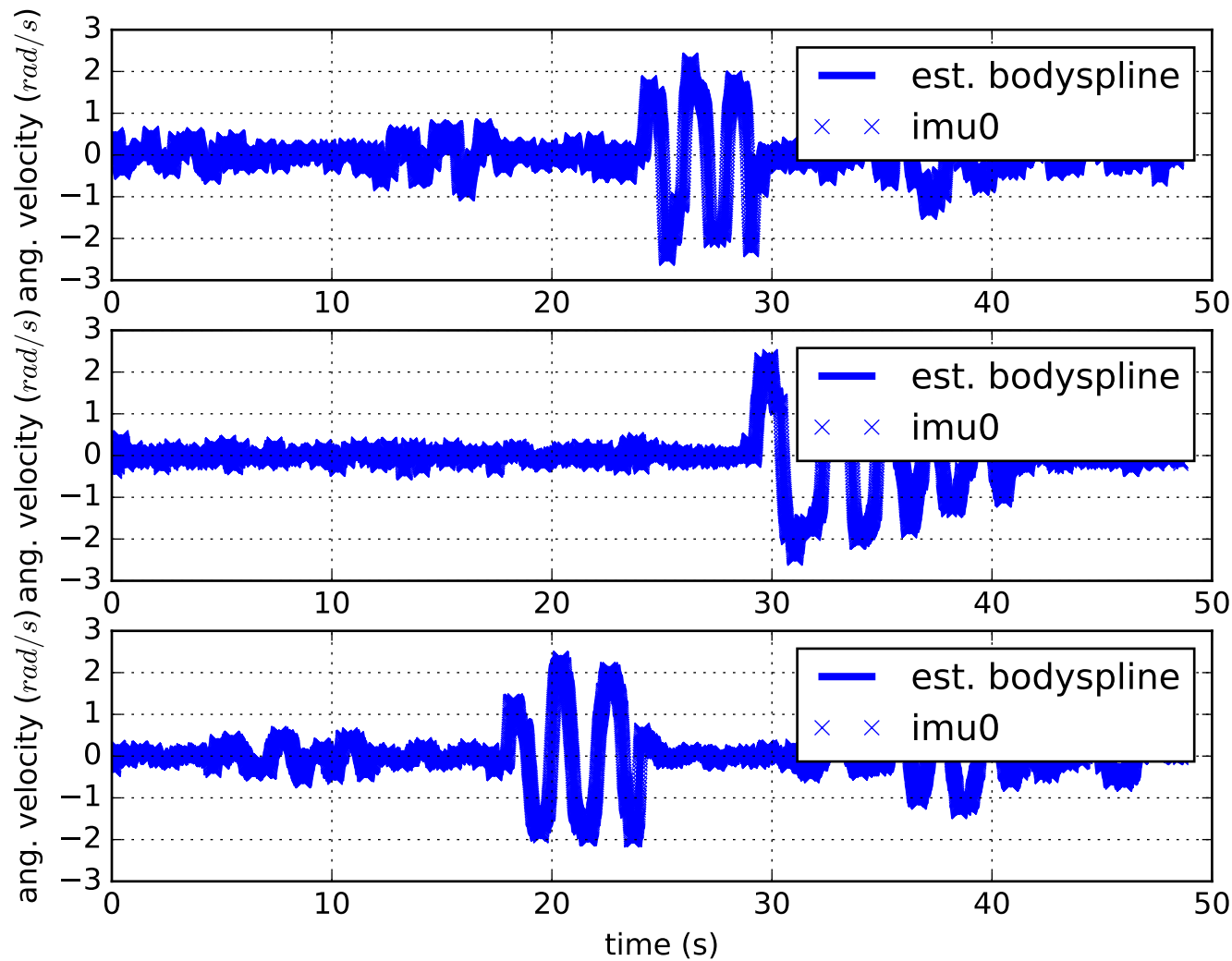
imu0: acceleration error



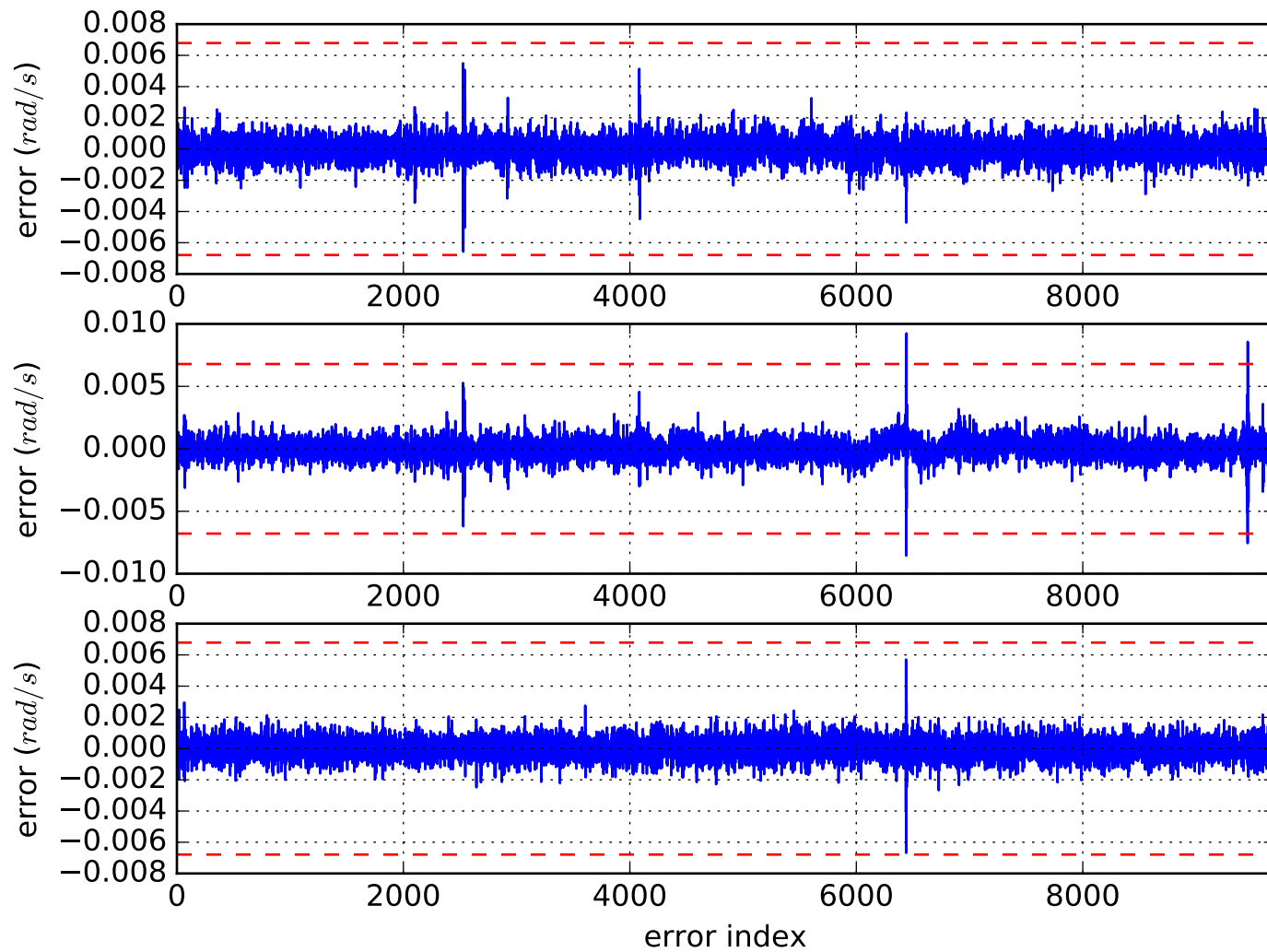
imu0: estimated accelerometer bias (imu frame)



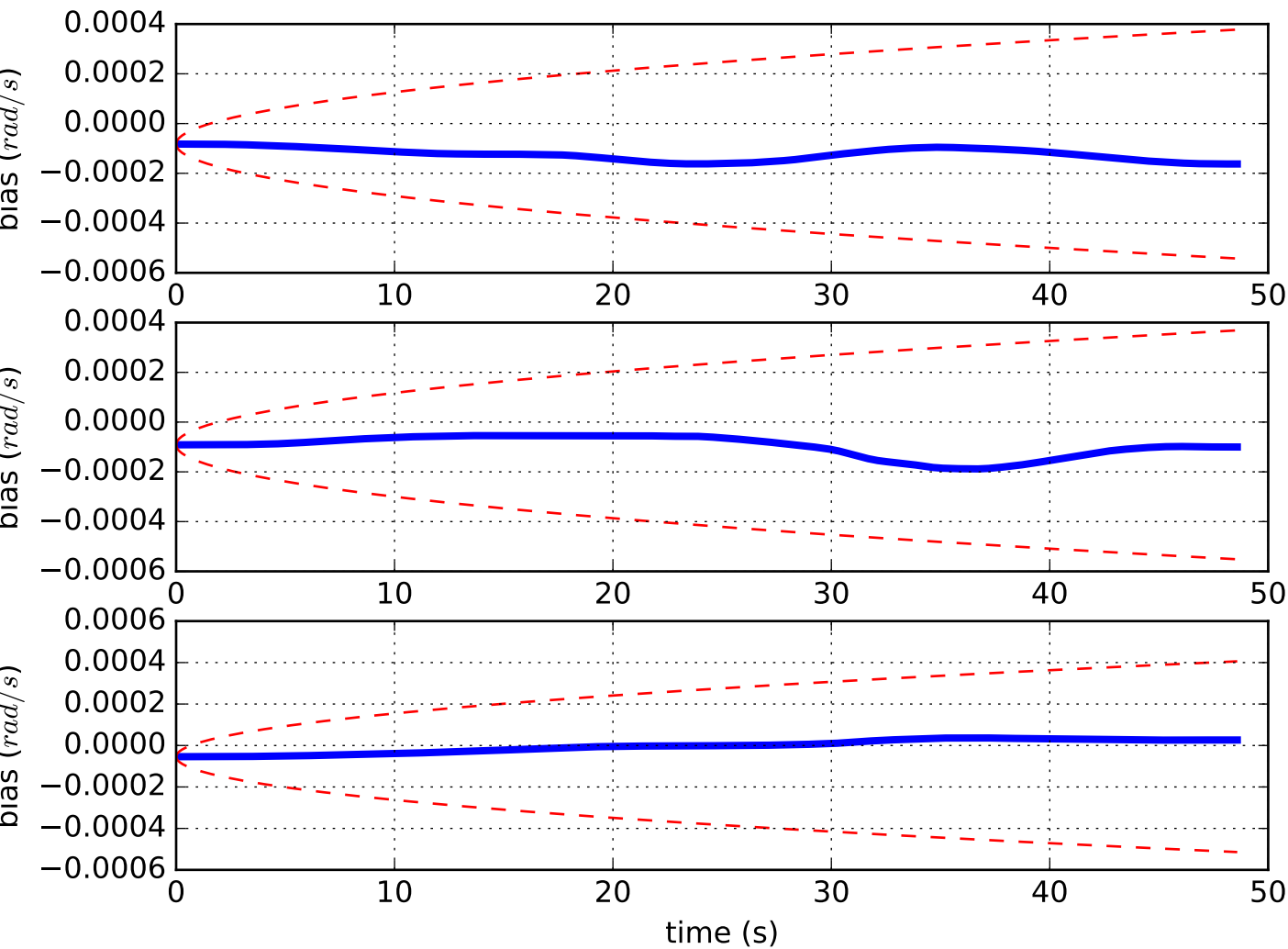
Comparison of predicted and measured angular velocities (body frame)



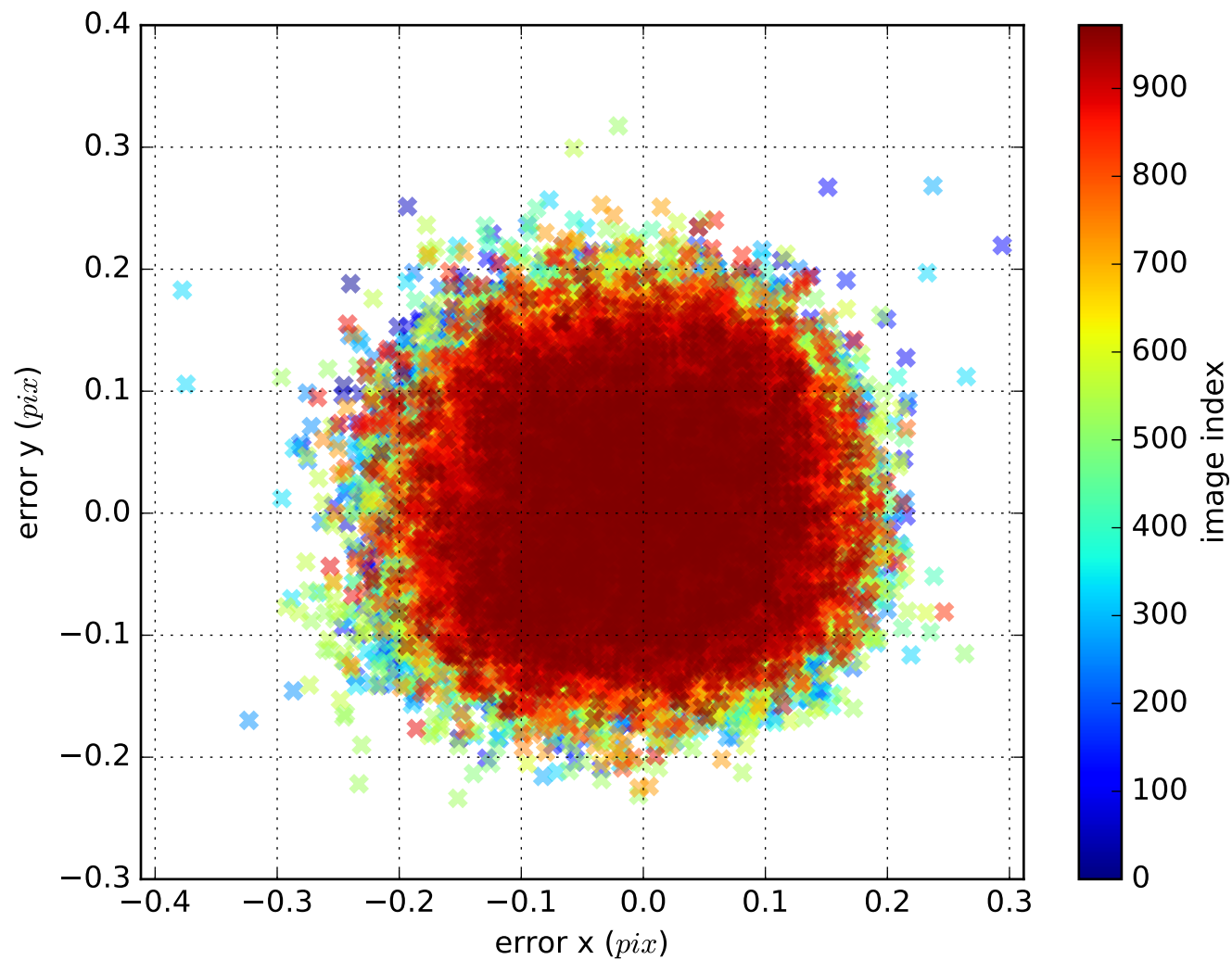
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

