

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.386501860086, median 0.328787592537, std: 0.259456329557
Reprojection error (cam1): mean 0.404584326539, median 0.346098770784, std: 0.267121067803
Gyroscope error (imu0): mean 1.09687002926, median 0.988880805776, std: 0.606506793261
Accelerometer error (imu0): mean 1.41296039276, median 1.24459175084, std: 0.903260262831

Residuals

Reprojection error (cam0) [px]: mean 0.386501860086, median 0.328787592537, std: 0.259456329557
Reprojection error (cam1) [px]: mean 0.404584326539, median 0.346098770784, std: 0.267121067803
Gyroscope error (imu0) [rad/s]: mean 0.0026320905345, median 0.0023729555364, std: 0.00145539648917
Accelerometer error (imu0) [m/s^2]: mean 0.0399645550106, median 0.0352023706732, std: 0.025548058281

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ 0.01482638  0.99960806 -0.0237467  0.06466556]
 [-0.99988818  0.01486854  0.00159981 -0.01582235]
 [ 0.00195226  0.02372033  0.99971673 -0.00351959]
 [ 0.          0.          0.          1.          ]]
```

T_ic: (cam0 to imu0):

```
[[ 0.01482638 -0.99988818  0.00195226 -0.01677246]
 [ 0.99960806  0.01486854  0.02372033 -0.06432148]
 [-0.0237467  0.00159981  0.99971673  0.0050795 ]
 [ 0.          0.          0.          1.          ]]
```

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

0.0

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[[ 0.01253229  0.99961166 -0.0248891 -0.04539803]
 [-0.99979919  0.01291613  0.01532192 -0.01559074]
 [ 0.01563744  0.02469208  0.99957279 -0.00435554]
```

[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):

[[0.01253229 -0.99979919 0.01563744 -0.01495056]
[0.99961166 0.01291613 0.02469208 0.04568932]
[-0.0248891 0.01532192 0.99957279 0.00346265]
[0. 0. 0. 1.]]

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

Baselines:

Baseline (cam0 to cam1):

[[0.99999672 0.00229206 -0.00114646 -0.11003115]
[-0.00227617 0.99990394 0.01367209 0.0004254]
[0.00117769 -0.01366943 0.99990588 -0.00112872]
[0. 0. 0. 1.]]

baseline norm: 0.110037763935 [m]

Gravity vector in target coords: [m/s^2]
[-0.00586794 -9.5567269 -2.19939978]

Calibration configuration

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cam0

Camera model: omni

Focal length: [1297.2842187970762, 1294.3453742607642]

Principal point: [369.34719678117114, 248.78699410888575]

Omni xi: 1.81870827168

Distortion model: radtan

Distortion coefficients: [-0.0533872098921597, 0.42829370671553346, 0.0005459336067191318, -0.002856897182503073]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.088 [m]
Spacing 0.0264 [m]

cam1

Camera model: omni
Focal length: [1288.5193501534068, 1284.924840155635]
Principal point: [382.7492775072789, 255.82002909607635]
Omni xi: 1.80589980684
Distortion model: radtan
Distortion coefficients: [-0.05657091553867408, 0.3890893153170708, -0.0007172658887298724, -0.002582077228747656]
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: 0.002
 Noise density (discrete): 0.0282842712475
 Random walk: 0.003
Gyroscope:
 Noise density: 0.00016968
 Noise density (discrete): 0.00239963757263
 Random walk: 1.9393e-05

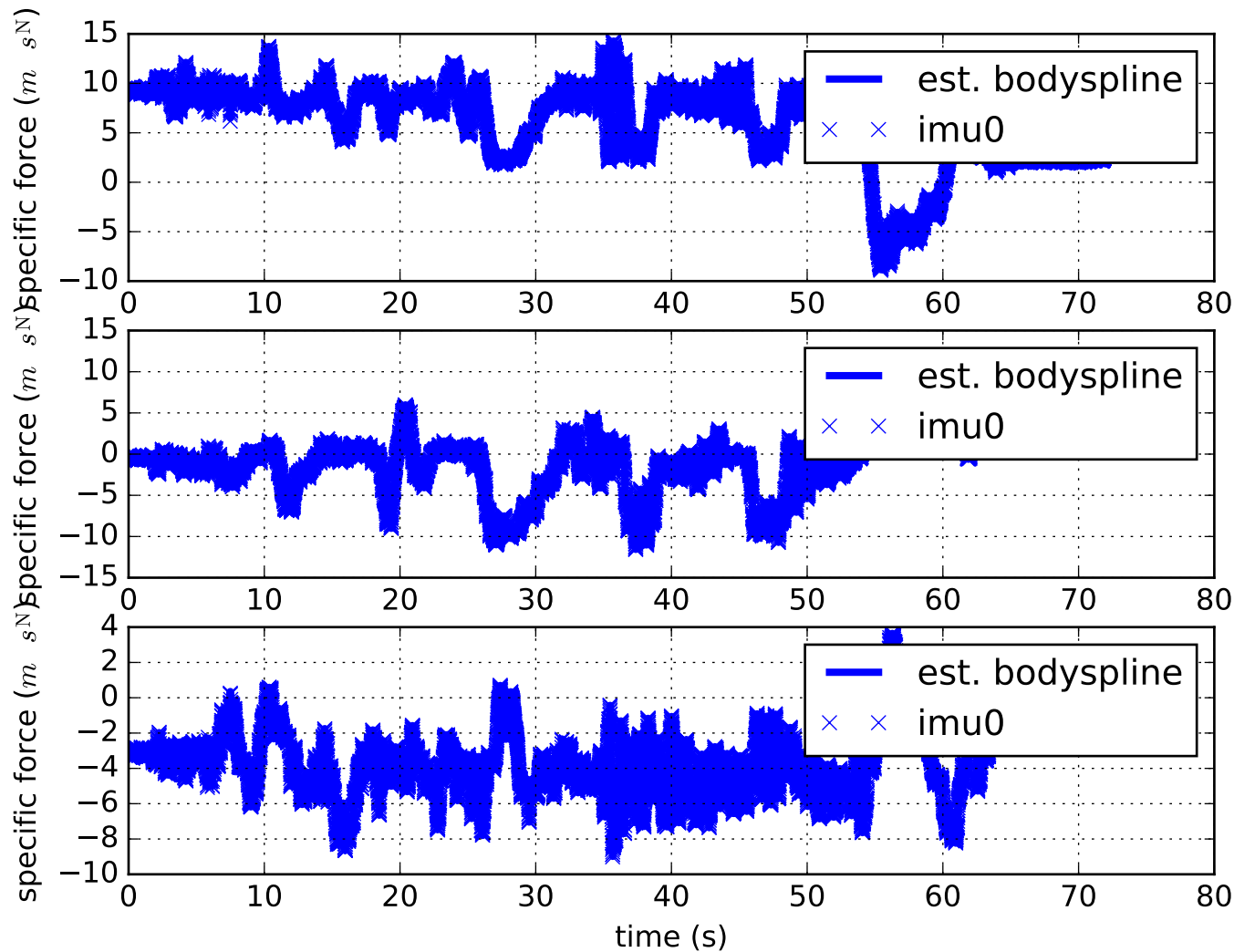
T_i_b

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

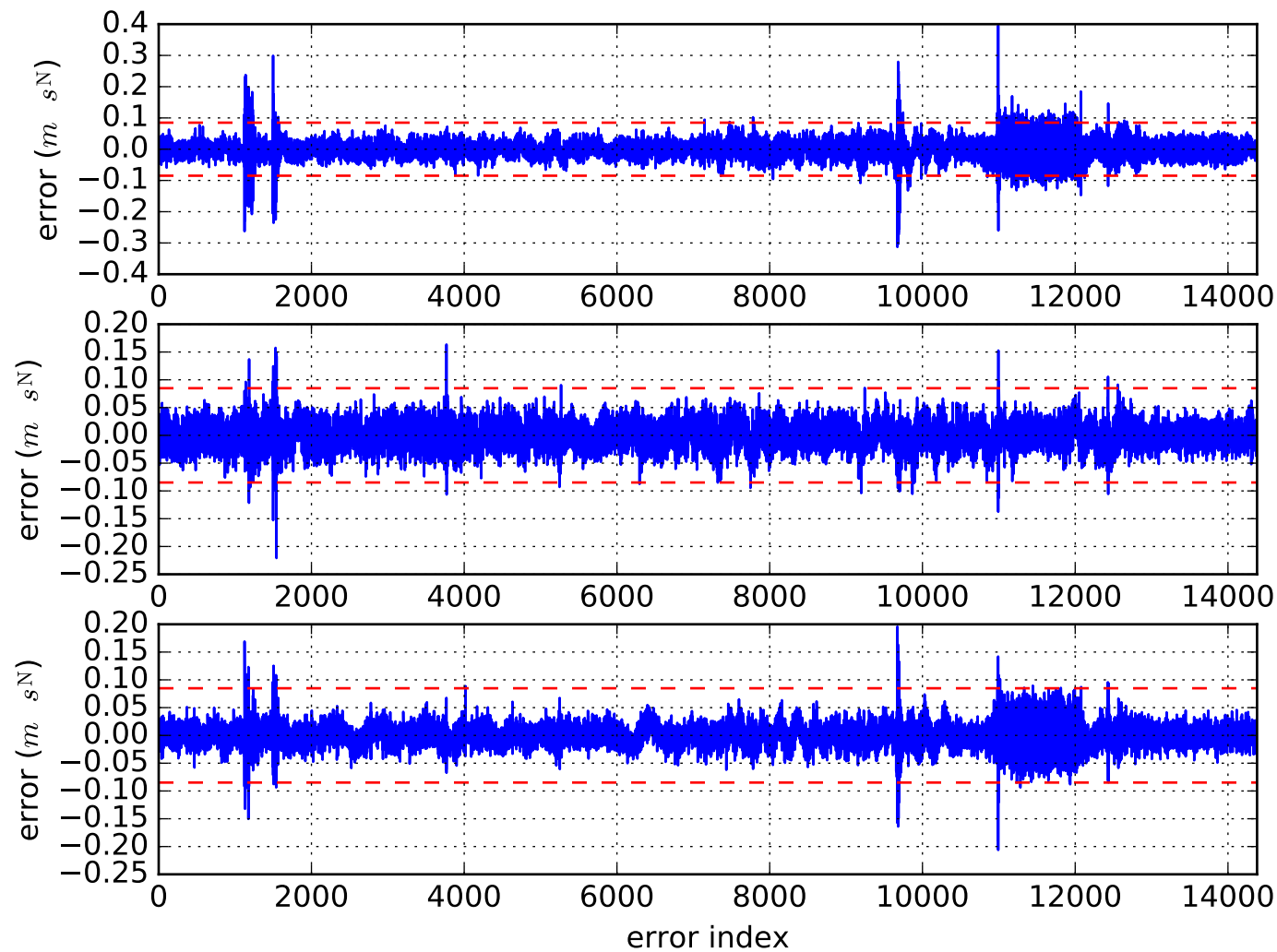
[0. 0. 0. 1.]

time offset with respect to IMU0: 0.0 [s]

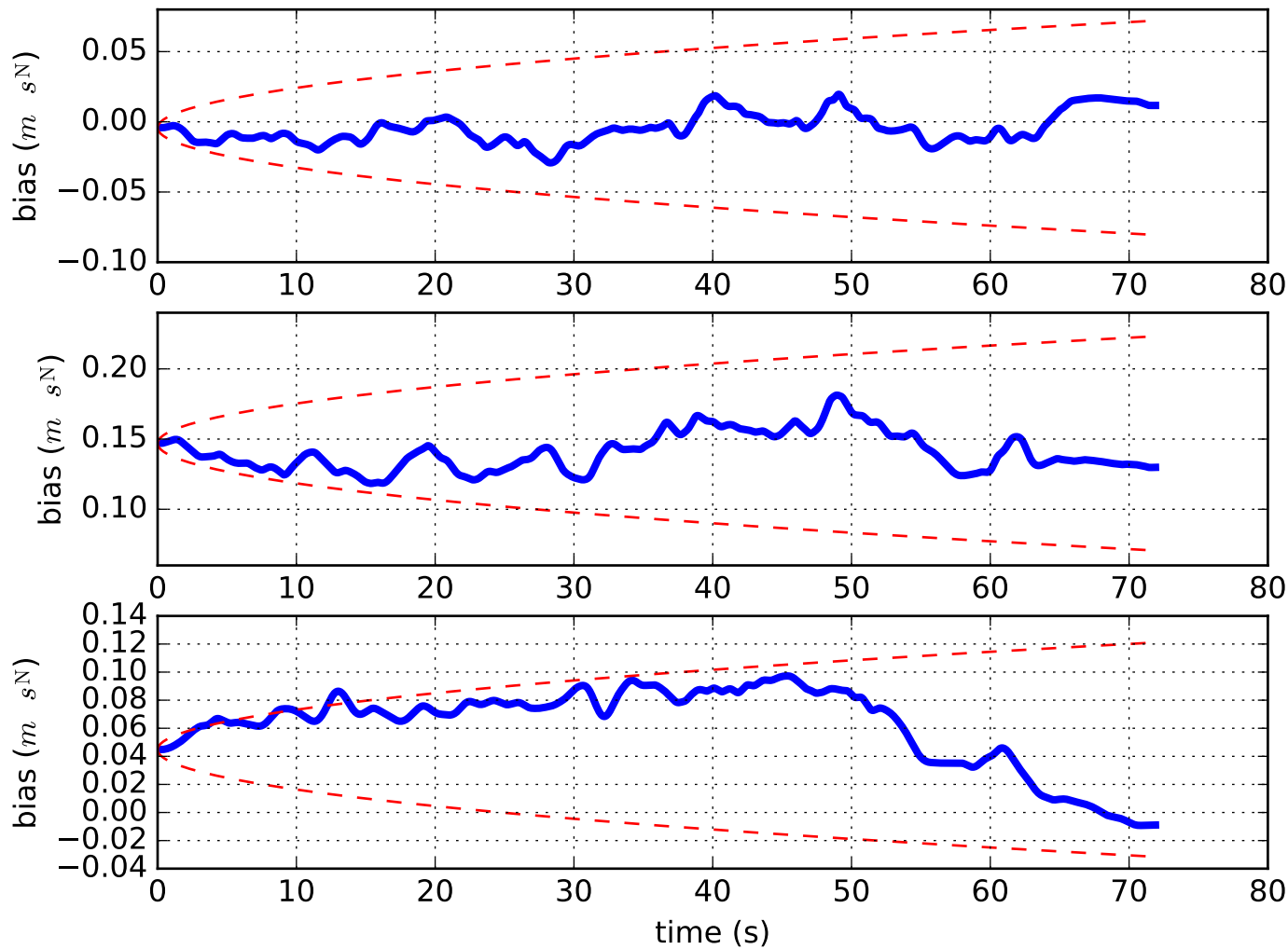
Comparison of predicted and measured specific force (imu0 frame)



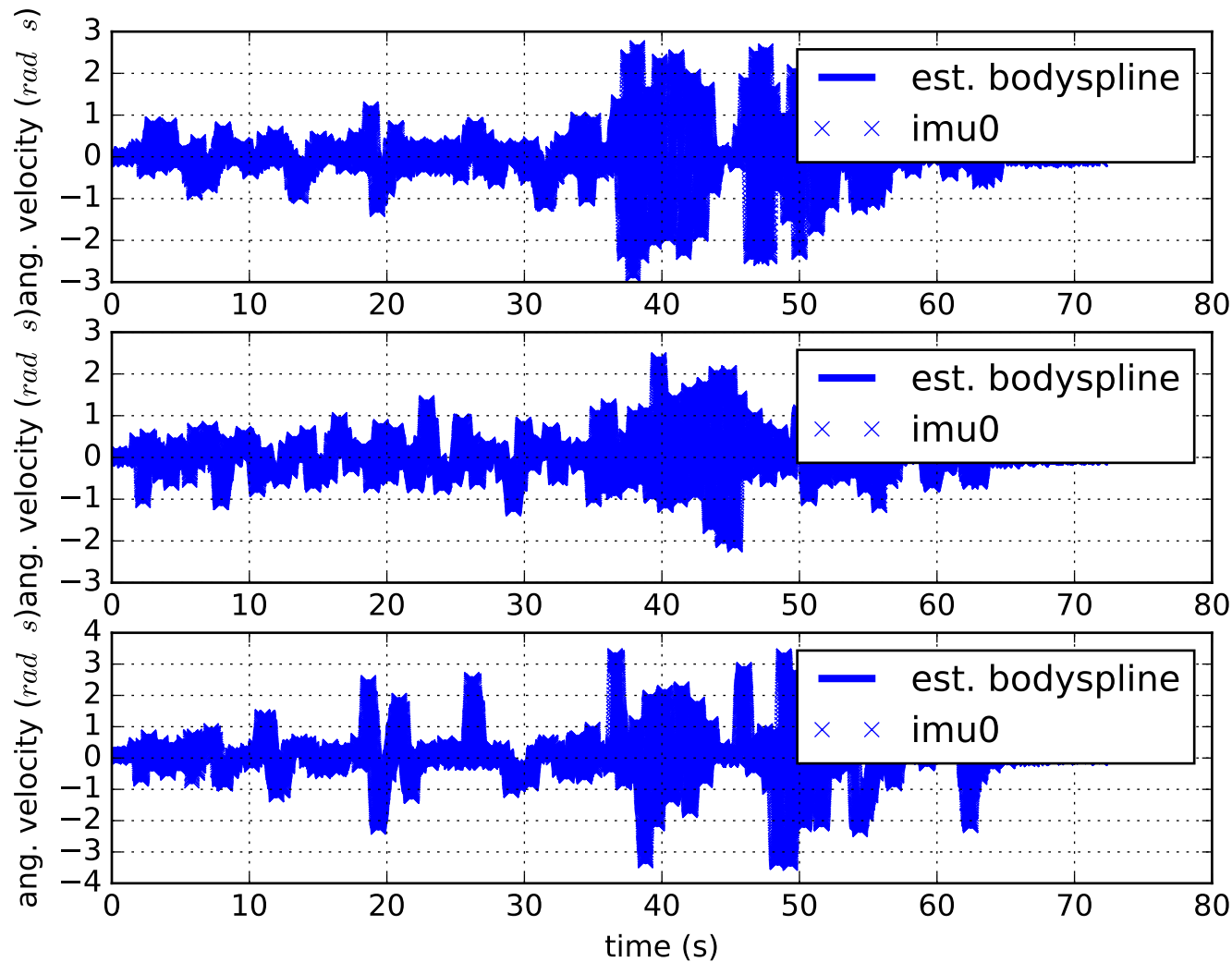
imu0: acceleration error



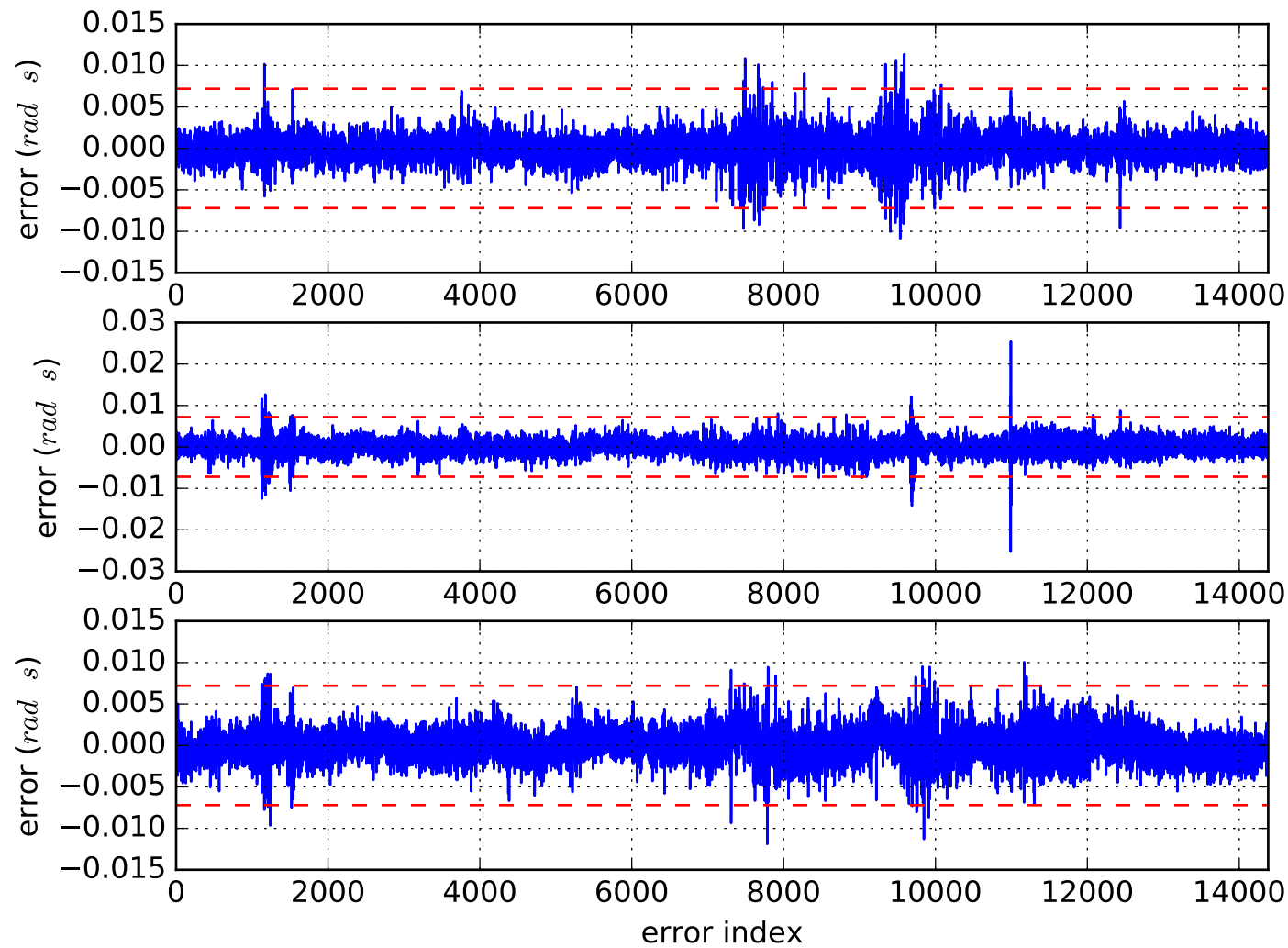
imu0: estimated accelerometer bias (imu frame)



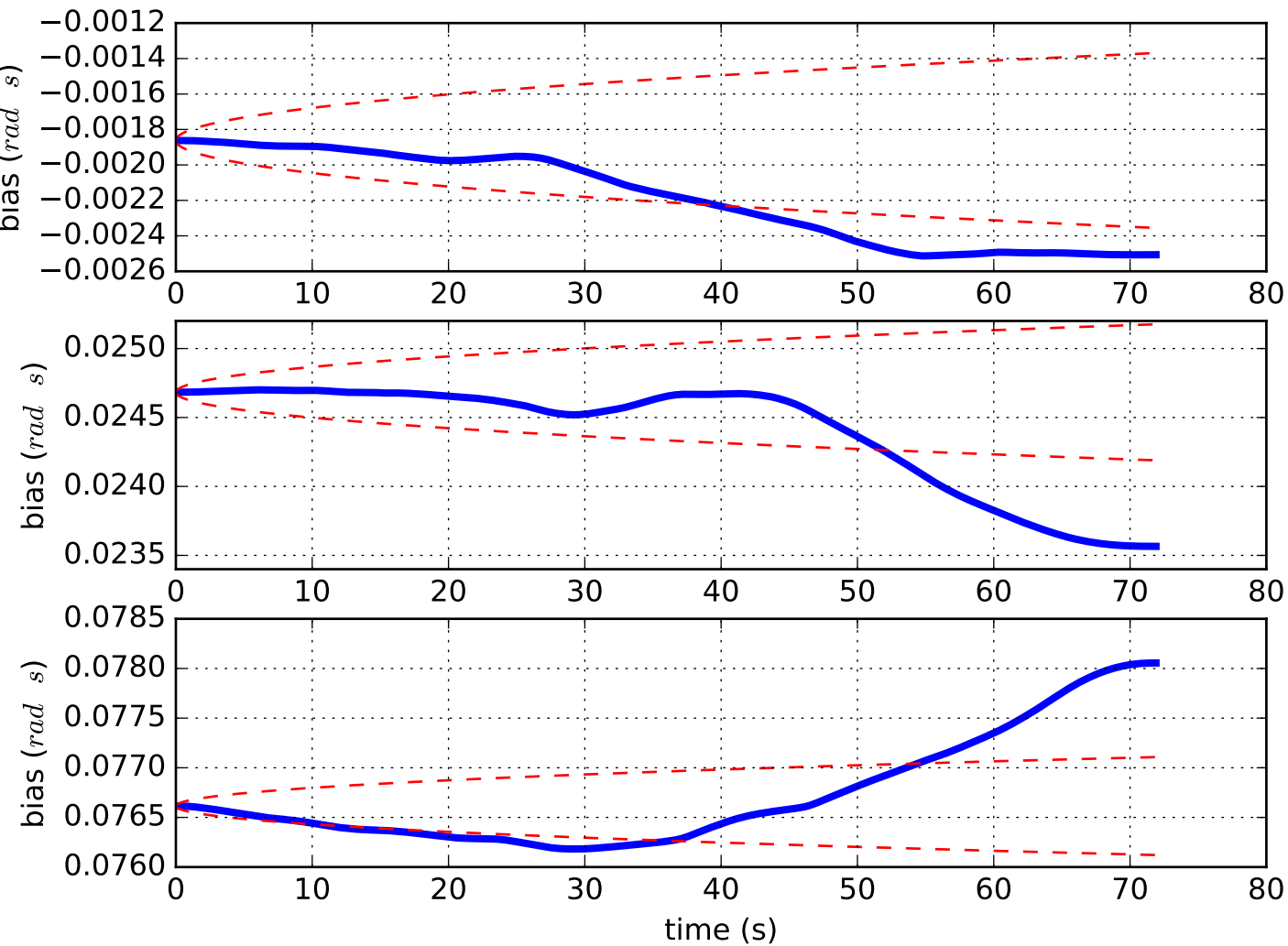
Comparison of predicted and measured angular velocities (body frame)



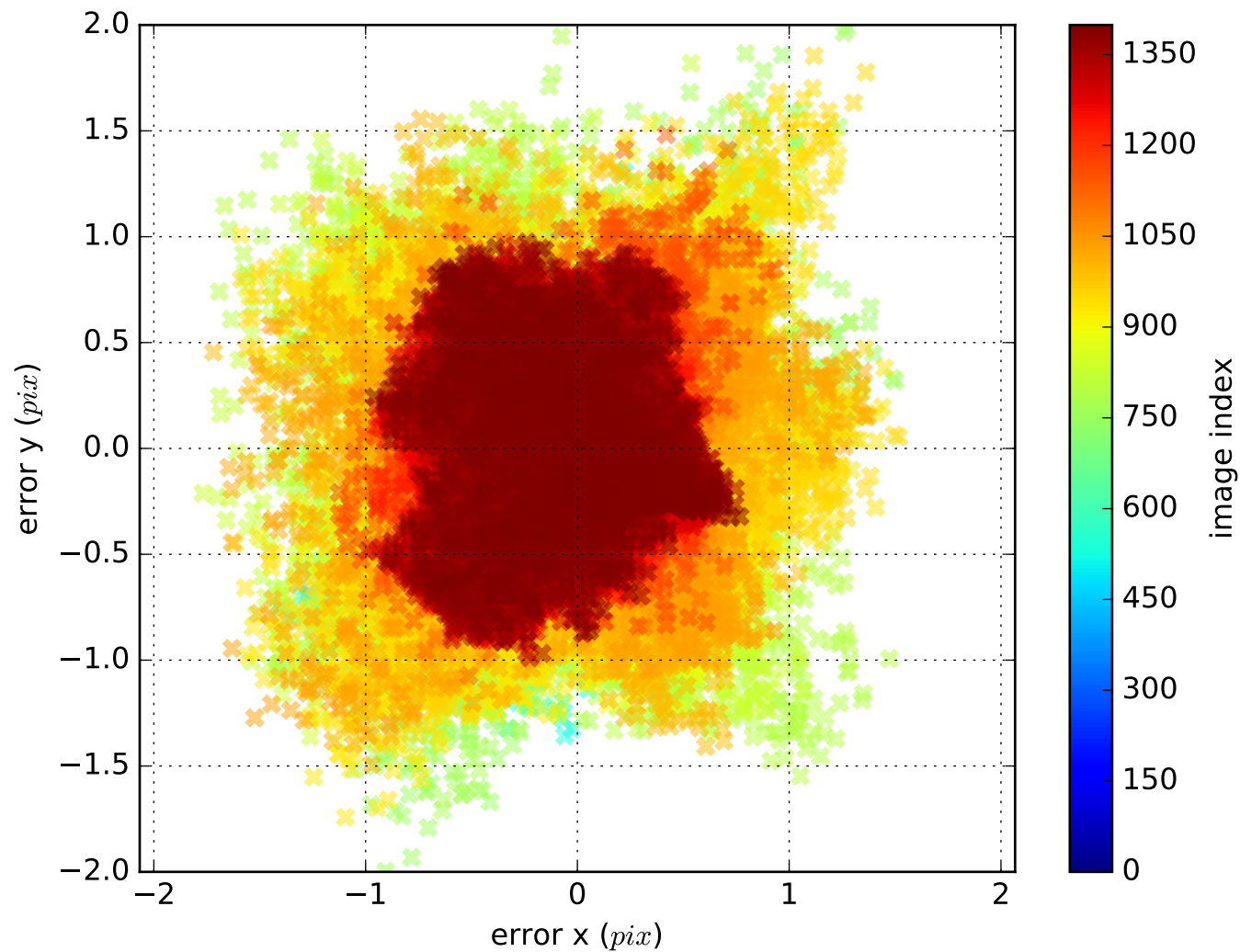
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

