

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.385247877553, median 0.327443088184, std: 0.259295230907
Reprojection error (cam1): mean 0.402660796211, median 0.344174853783, std: 0.266789001959
Gyroscope error (imu0): mean 1.09648484798, median 0.989207653513, std: 0.606320098099
Accelerometer error (imu0): mean 1.41176692447, median 1.24365949077, std: 0.903101436239

Residuals

Reprojection error (cam0) [px]: mean 0.385247877553, median 0.327443088184, std: 0.259295230907
Reprojection error (cam1) [px]: mean 0.402660796211, median 0.344174853783, std: 0.266789001959
Gyroscope error (imu0) [rad/s]: mean 0.00263116623904, median 0.00237373985251, std: 0.00145494848844
Accelerometer error (imu0) [m/s^2]: mean 0.03993079863, median 0.0351760023765, std: 0.0255435659865

Transformation (cam0):

T_ci: (imu0 to cam0):
[[0.01482521 0.99962769 -0.02290623 0.06520509]
[-0.99988884 0.01485766 0.00124681 -0.01606279]
[0.00158668 0.0228852 0.99973684 -0.00385218]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):
[[0.01482521 -0.99988884 0.00158668 -0.01702157]
[0.99962769 0.01485766 0.0228852 -0.064854]
[-0.02290623 0.00124681 0.99973684 0.0053648]
[0. 0. 0. 1.]]

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

Transformation (cam1):

T_ci: (imu0 to cam1):
[[0.01256989 0.99963188 -0.02404378 -0.04483578]
[-0.99980352 0.01293335 0.01502139 -0.0158732]
[0.01532683 0.02385024 0.99959805 -0.00457128]

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

T_ic: (cam1 to imu0):

```
[[ 0.01256989 -0.99980352 0.01532683 -0.01523644]
 [ 0.99963188 0.01293335 0.02385024 0.04513359]
 [-0.02404378 0.01502139 0.99959805 0.00372986]
 [ 0.    0.    0.    1.   ]]
```

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

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99999681 0.00225371 -0.00114074 -0.11000886]
 [-0.00223784 0.99990328 0.01372706 0.00038683]
 [ 0.00117156 -0.01372446 0.99990513 -0.00101631]
 [ 0.    0.    0.    1.   ]]
```

baseline norm: 0.110014231921 [m]

Gravity vector in target coords: [m/s^2]
[-0.00654963 -9.55678629 -2.1991398]

Calibration configuration

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cam0

Camera model: omni

Focal length: [1297.0621563203283, 1293.9321408509356]

Principal point: [368.7306595329022, 249.0612285941627]

Omni xi: 1.81866865357

Distortion model: radtan

Distortion coefficients: [-0.055452318664206635, 0.43993134758439767, 0.0003241072920296429, -0.0025615528450637706]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.088 [m]
Spacing 0.0264 [m]

cam1

Camera model: omni
Focal length: [1288.5805979954941, 1284.8994400704644]
Principal point: [382.11944578658876, 256.08485437010285]
Omni xi: 1.80623023817
Distortion model: radtan
Distortion coefficients: [-0.0634064886917845, 0.4547379833983565, -0.0008722822299345, -0.0022790507168923375]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.088 [m]
 Spacing 0.0264 [m]

IMU configuration
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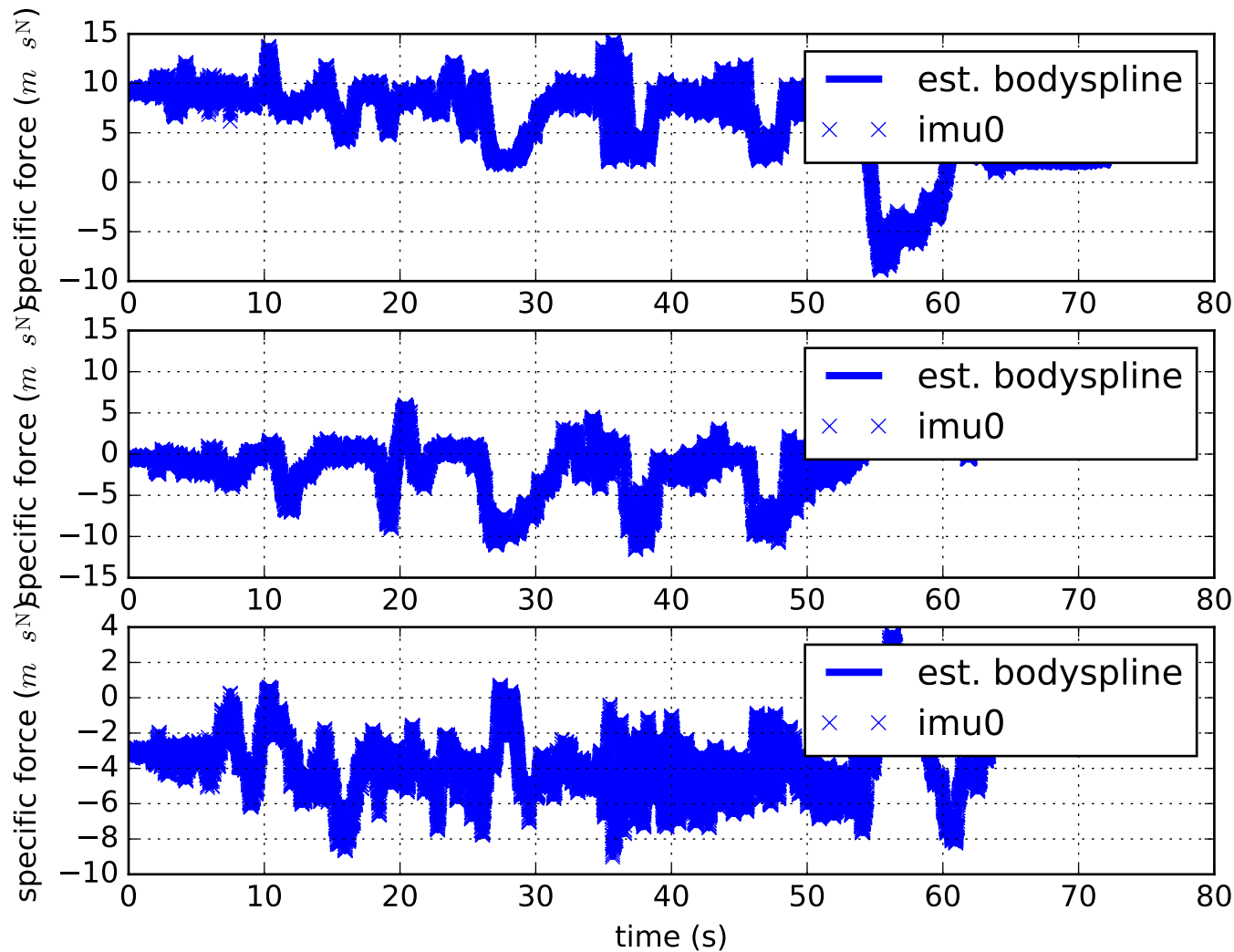
IMU0:

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.]

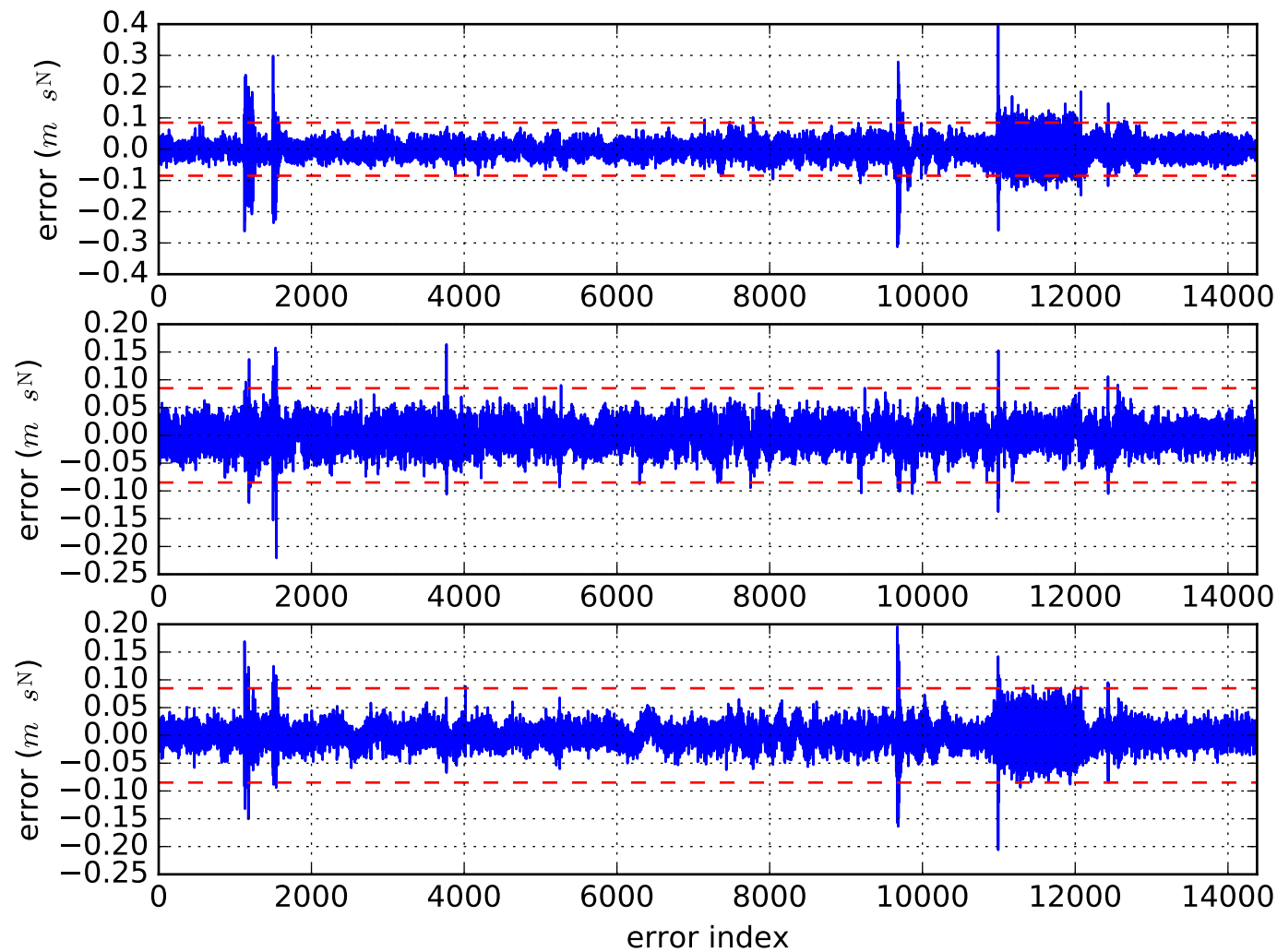
[0. 0. 0. 1.]

time offset with respect to IMU0: 0.0 [s]

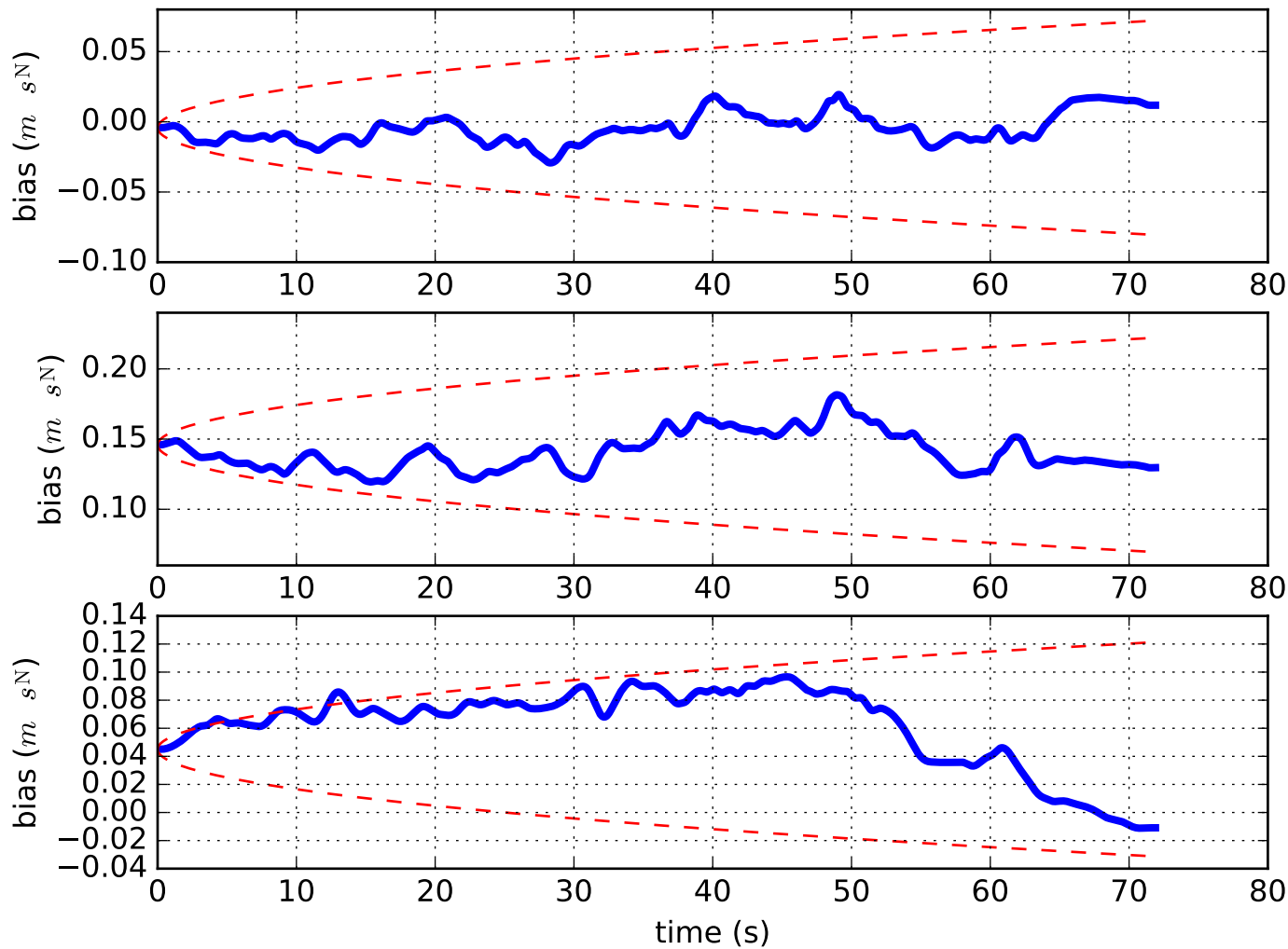
Comparison of predicted and measured specific force (imu0 frame)



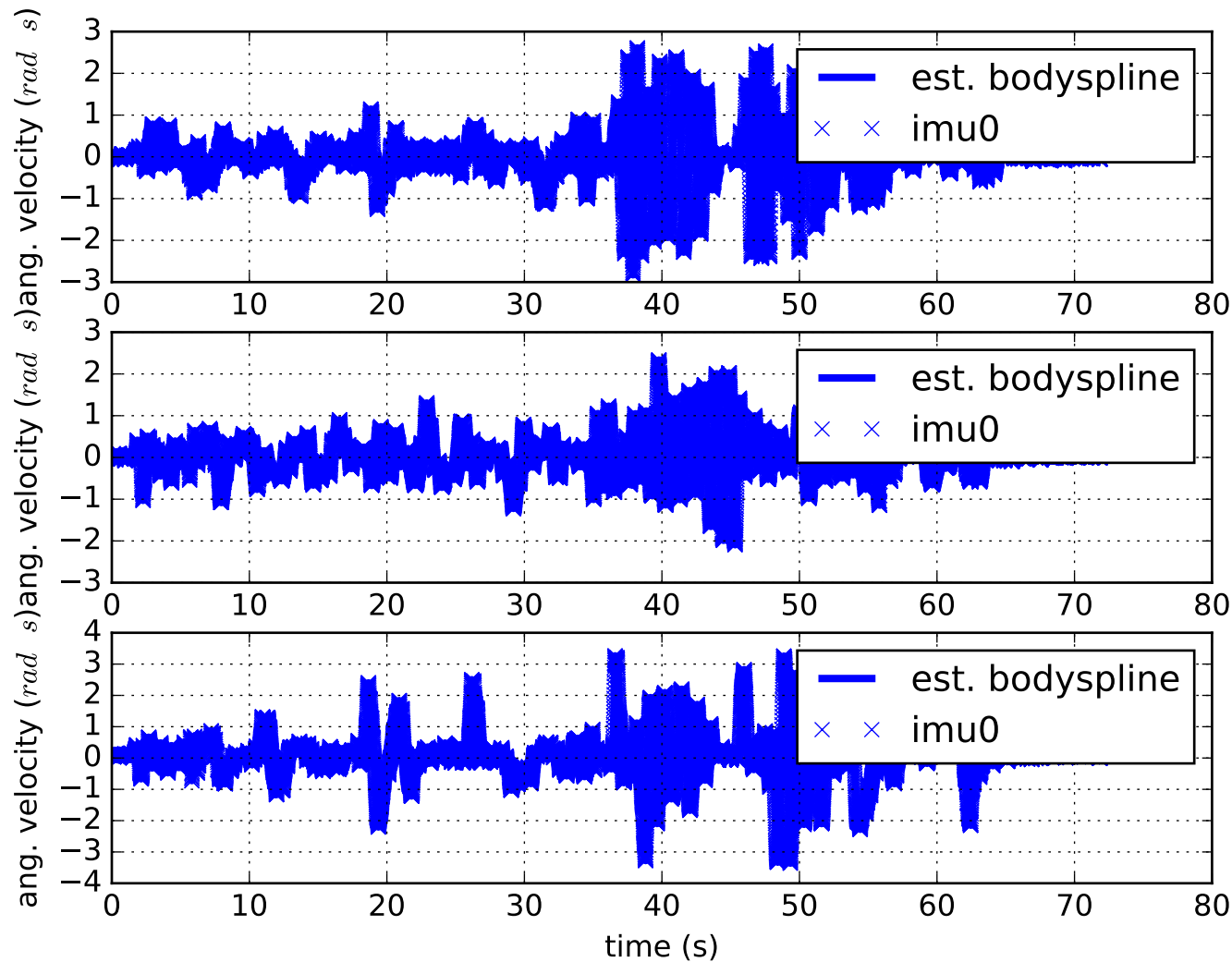
imu0: acceleration error



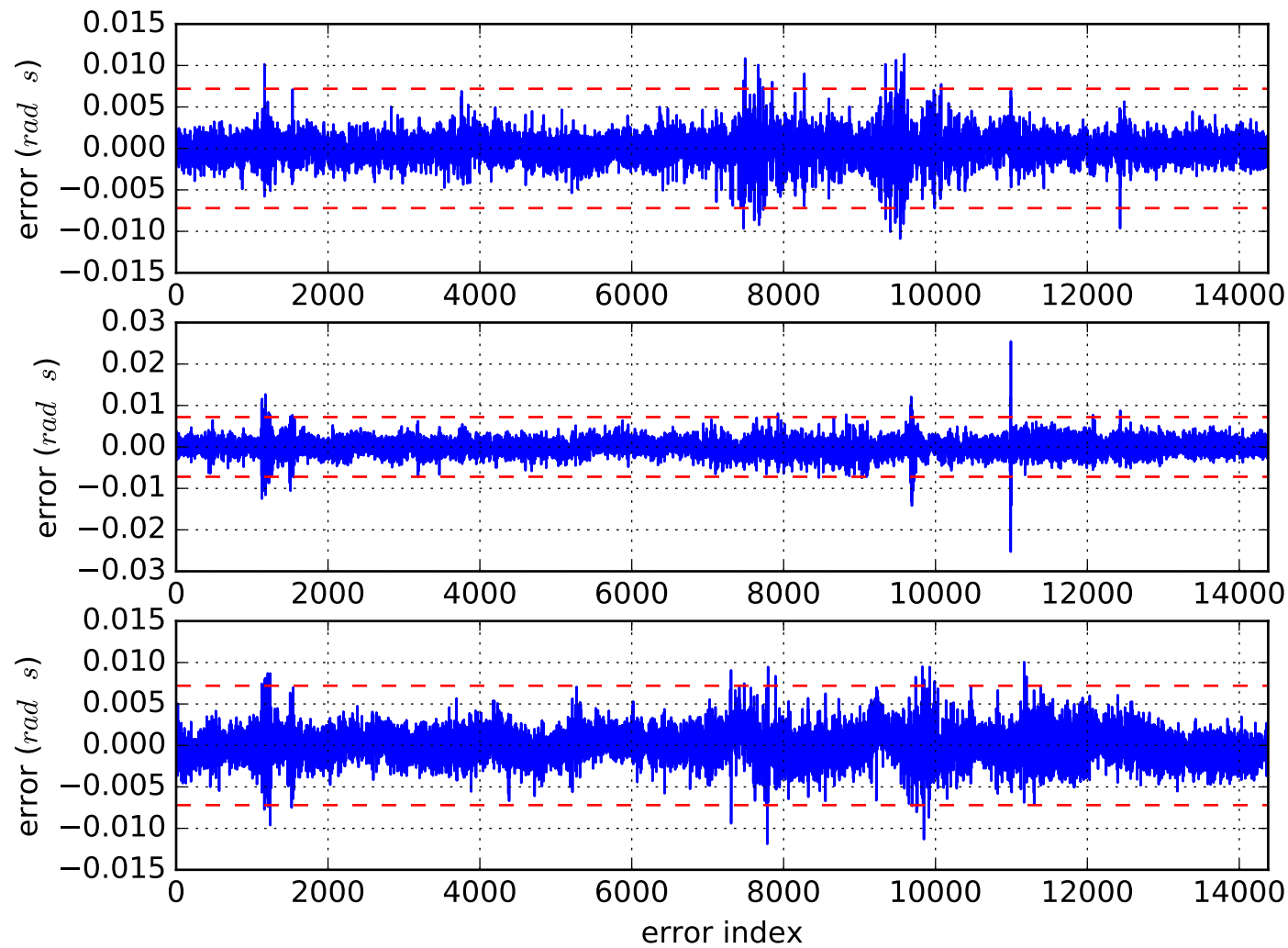
imu0: estimated accelerometer bias (imu frame)



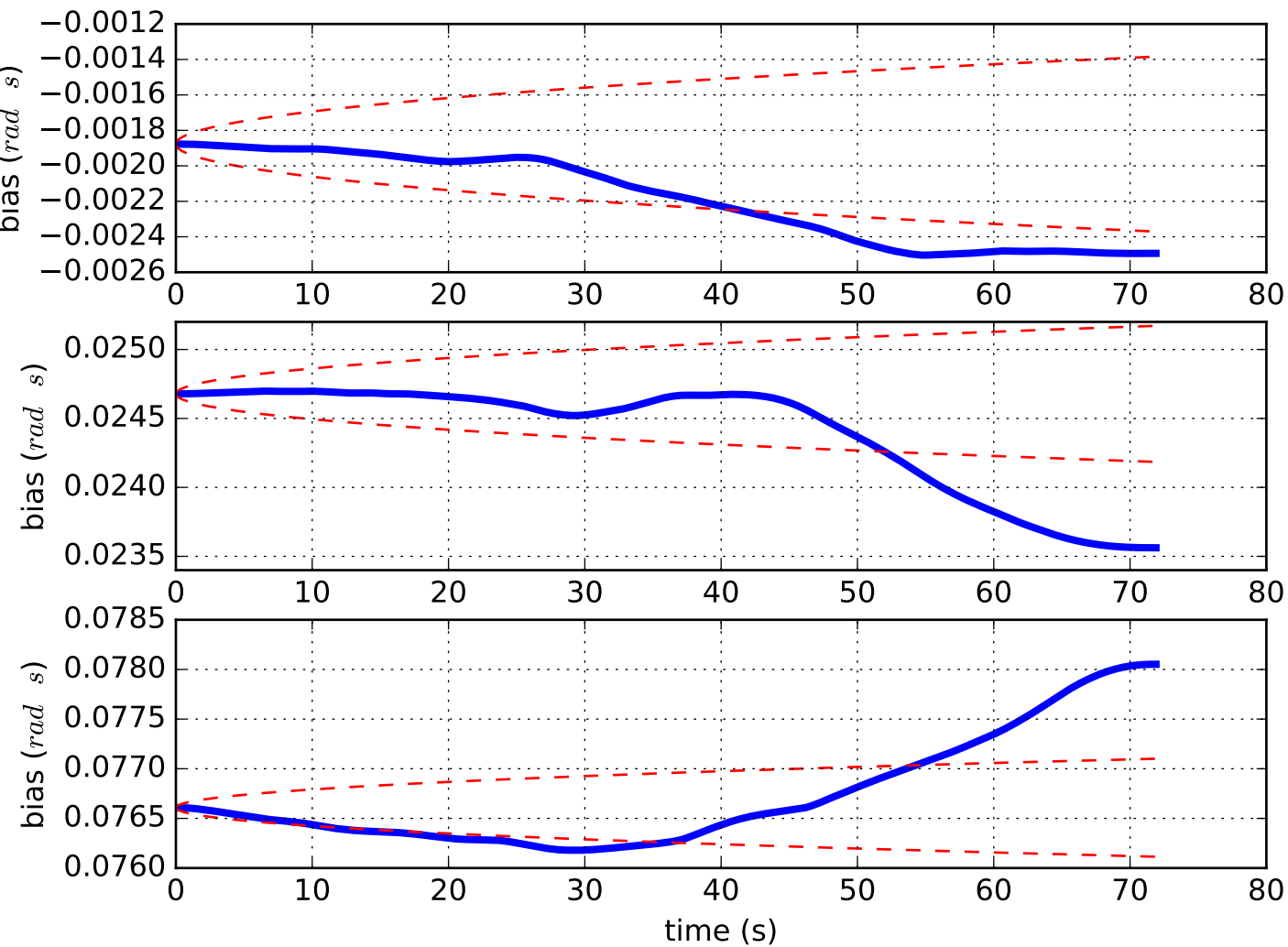
Comparison of predicted and measured angular velocities (body frame)



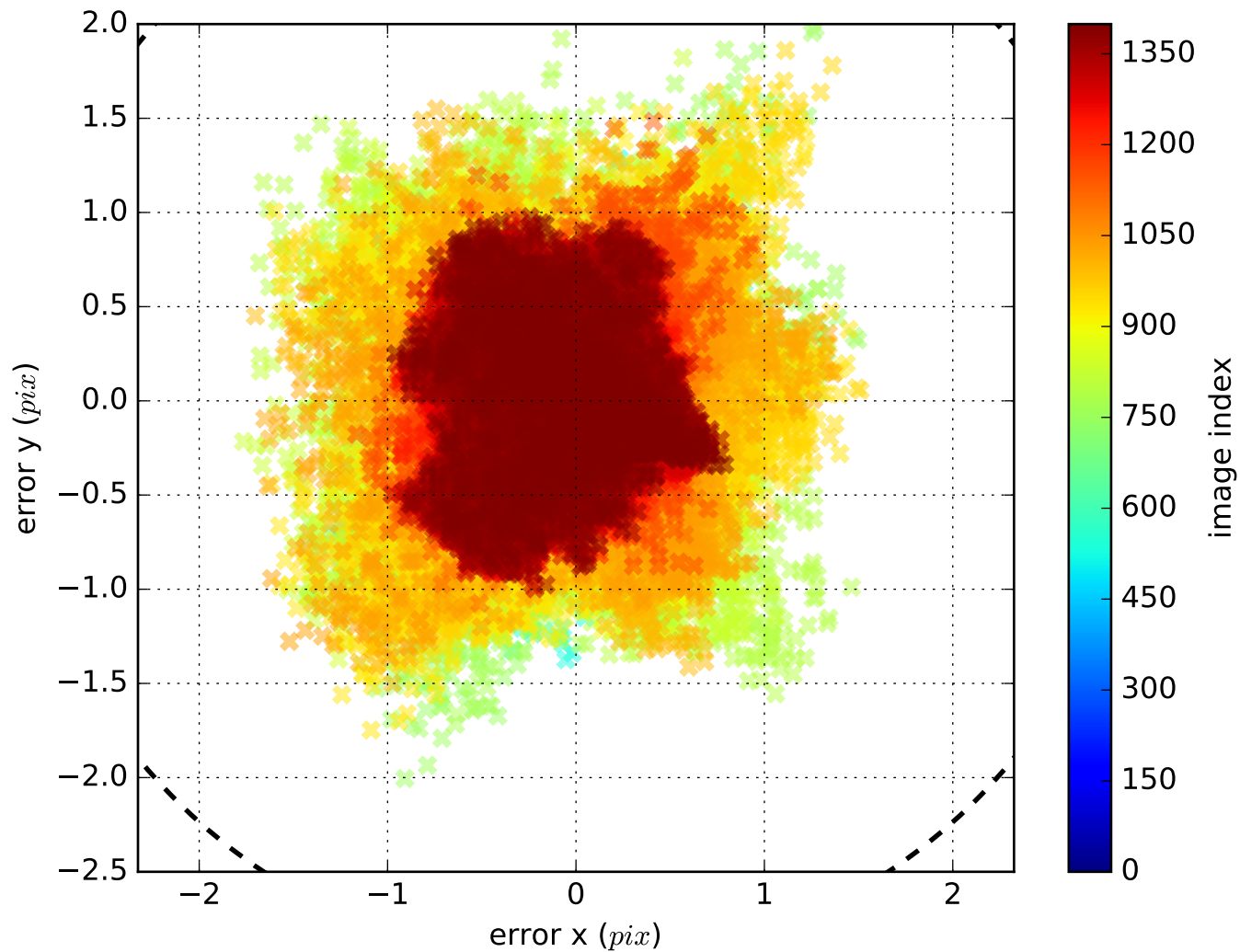
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

