

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.374540650016, median 0.316268022969, std: 0.25651173793
Reprojection error (cam1): mean 0.392987650502, median 0.333454117016, std: 0.26526166542
Gyroscope error (imu0): mean 1.09423361287, median 0.986213063753, std: 0.605025272289
Accelerometer error (imu0): mean 1.40332826969, median 1.23246269763, std: 0.901916407622

Residuals

Reprojection error (cam0) [px]: mean 0.374540650016, median 0.316268022969, std: 0.25651173793
Reprojection error (cam1) [px]: mean 0.392987650502, median 0.333454117016, std: 0.26526166542
Gyroscope error (imu0) [rad/s]: mean 0.00262576409068, median 0.0023665539224, std: 0.00145184137578
Accelerometer error (imu0) [m/s^2]: mean 0.0396921174291, median 0.0348593092421, std: 0.0255100483157

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ 0.01490585  0.99970581 -0.01913419  0.06876919]
 [-0.99988594  0.01494966  0.00214873 -0.01561744]
 [ 0.00243415  0.01909998  0.99981462 -0.00602048]
 [ 0.         0.         0.         1.        ]]
```

T_ic: (cam0 to imu0):

```
[[ 0.01490585 -0.99988594  0.00243415 -0.01662607]
 [ 0.99970581  0.01494966  0.01909998 -0.0684005 ]
 [-0.01913419  0.00214873  0.99981462  0.00736876]
 [ 0.         0.         0.         1.        ]]
```

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

0.0

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[[ 0.01264239  0.99970519 -0.02072908 -0.04138002]
 [-0.99978146  0.0129831  0.01638489 -0.0150488 ]
 [ 0.01664919  0.0205174  0.99965086 -0.00627499]
```

[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):

[[0.01264239 -0.99978146 0.01664919 -0.01441789]
[0.99970519 0.0129831 0.0205174 0.04169195]
[-0.02072908 0.01638489 0.99965086 0.0056616]
[0. 0. 0. 1.]]

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

Baselines:

Baseline (cam0 to cam1):

[[0.99999617 0.00225976 -0.00160011 -0.1101233]
[-0.00223682 0.99989673 0.01419622 0.00080633]
[0.00163202 -0.01419258 0.99989795 -0.00058901]
[0. 0. 0. 1.]]

baseline norm: 0.110127824588 [m]

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

[-0.01156143 -9.55679866 -2.19906539]

Calibration configuration

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cam0

Camera model: ds

Focal length: [356.7364659290603, 355.7267858126691]

Principal point: [365.4879655797959, 248.53176824210715]

DS xi: -0.223698529312

DS alpha: 0.57237881595

Distortion model: none

Distortion coefficients: []

Type: aprilgrid

Tags:

Rows: 6

Cols: 6
Size: 0.088 [m]
Spacing 0.0264 [m]

cam1

Camera model: ds
Focal length: [359.6229544644453, 358.56430105269357]
Principal point: [379.15458136464287, 255.1292742202696]
DS xi: -0.215451729678
DS alpha: 0.574945252077
Distortion model: none
Distortion coefficients: []
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.088 [m]
 Spacing 0.0264 [m]

IMU configuration

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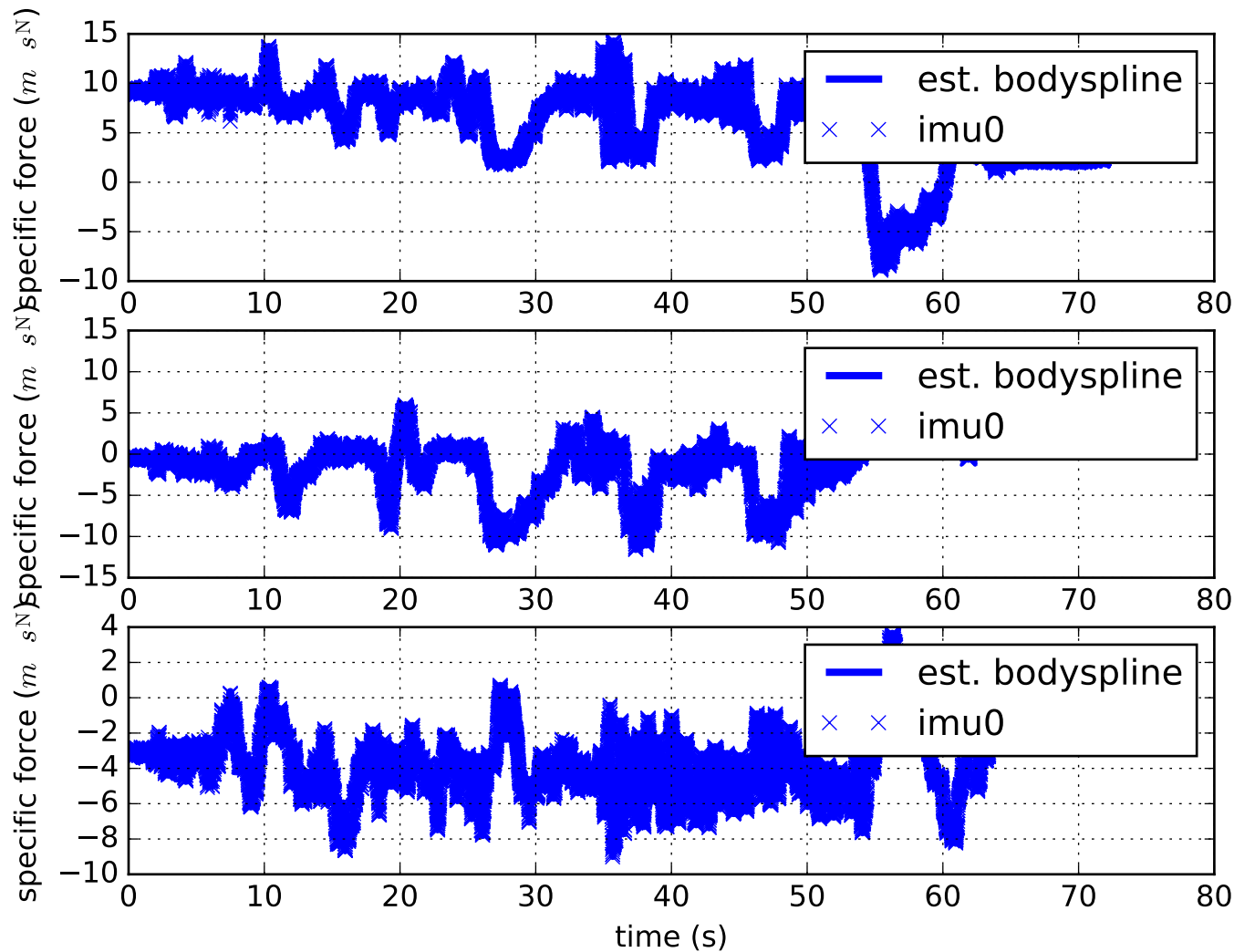
IMU0:

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.]

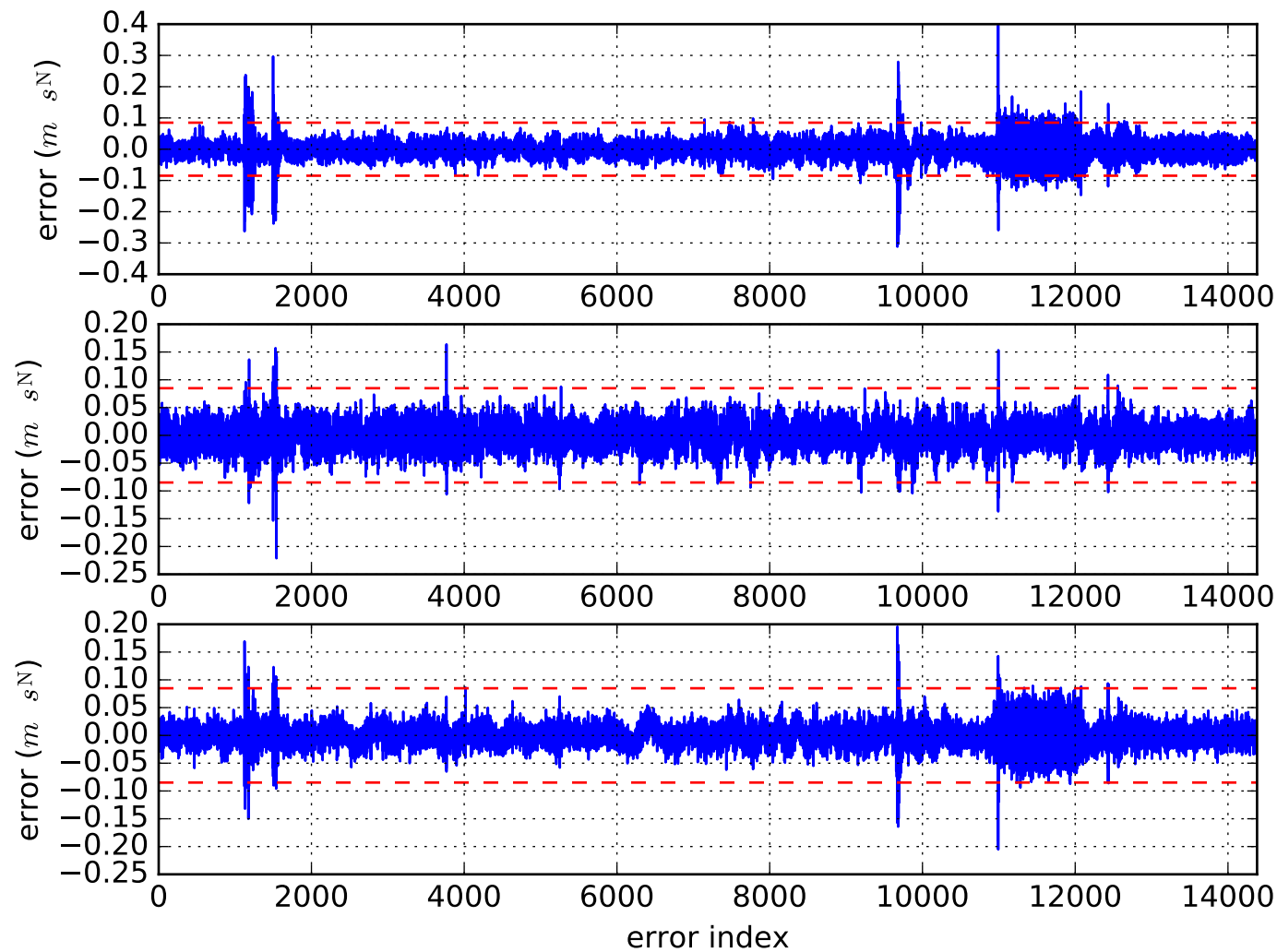
```
[ 0. 1. 0. 0.]  
[ 0. 0. 1. 0.]  
[ 0. 0. 0. 1.]
```

time offset with respect to IMU0: 0.0 [s]

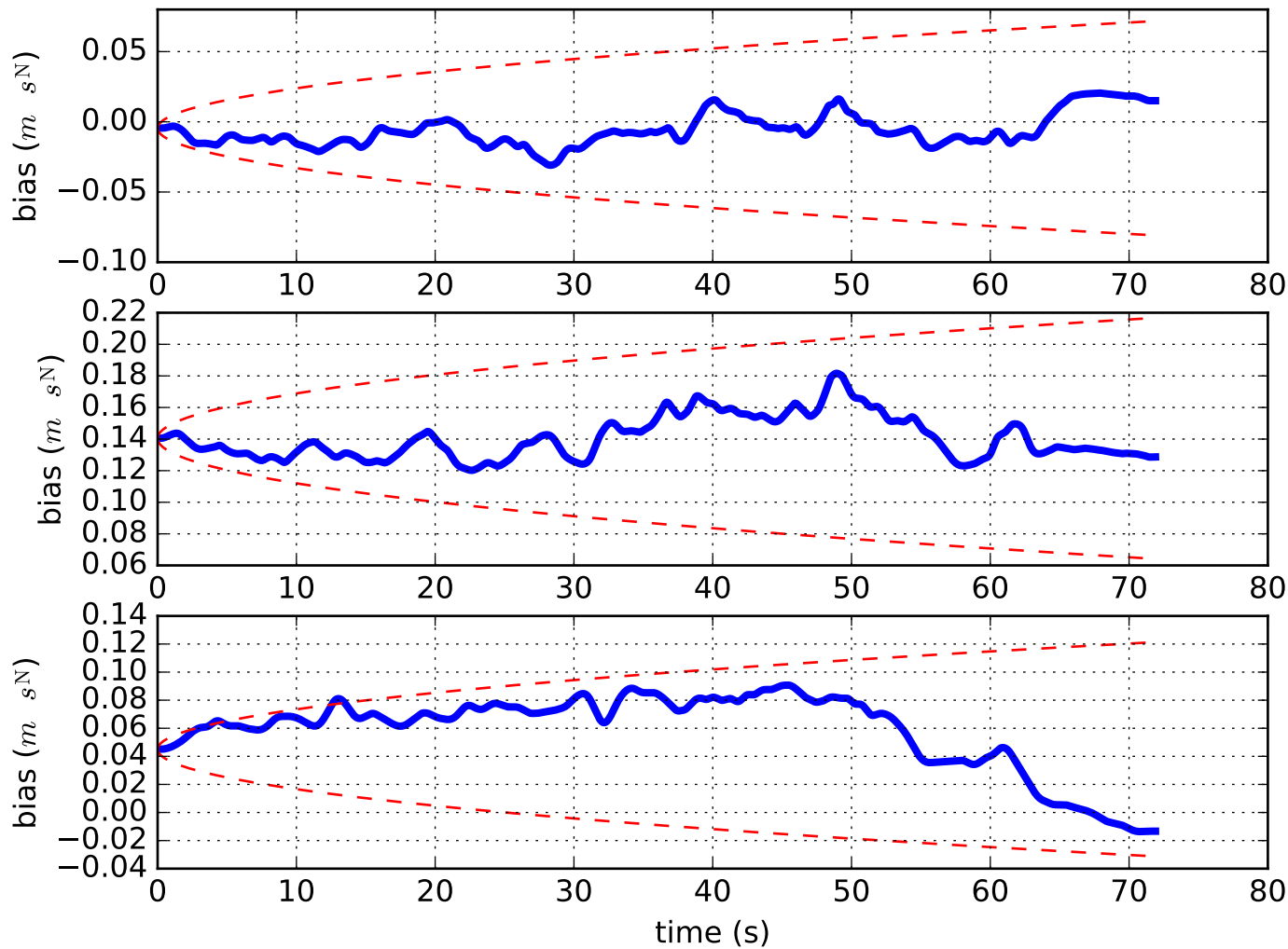
Comparison of predicted and measured specific force (imu0 frame)



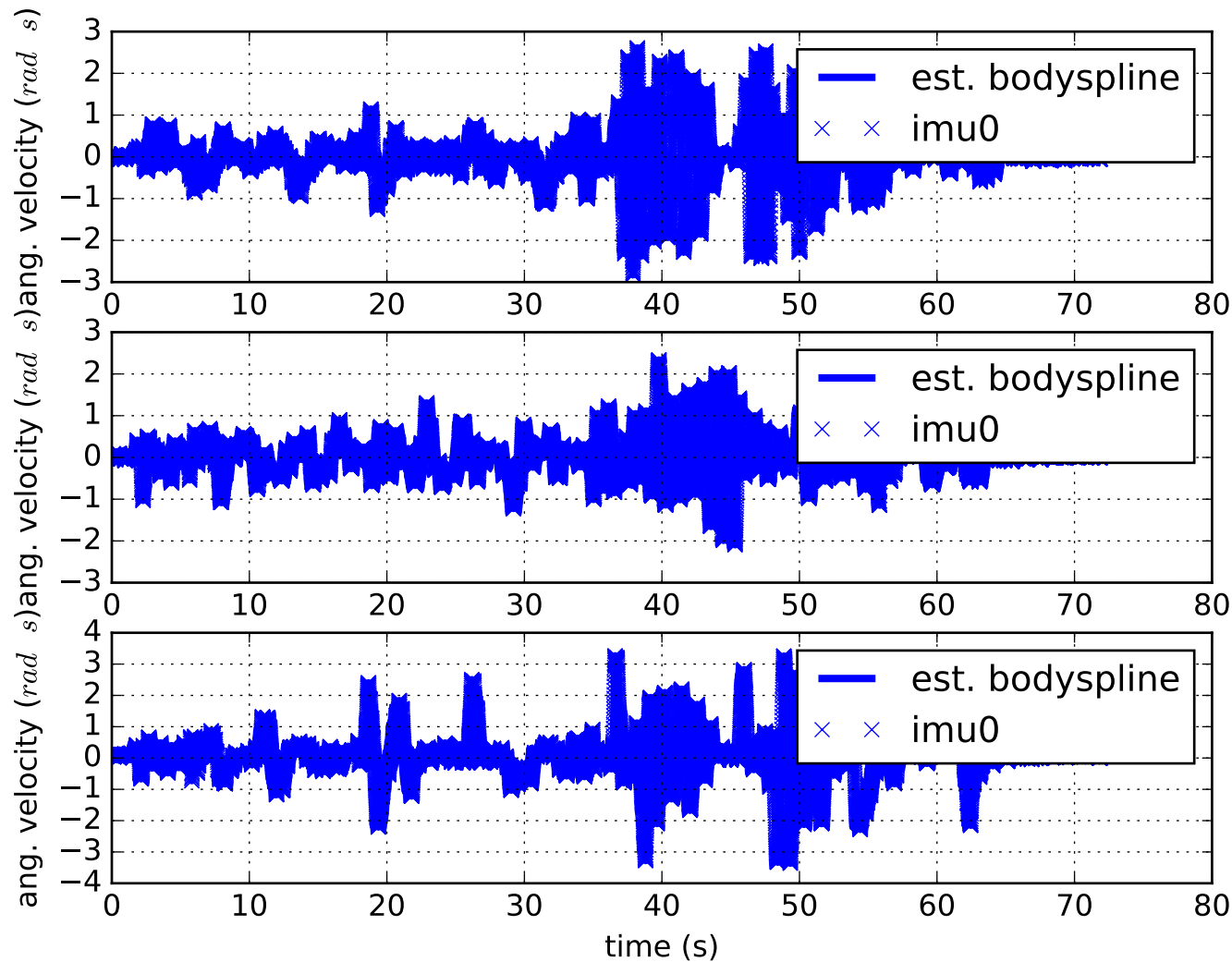
imu0: acceleration error



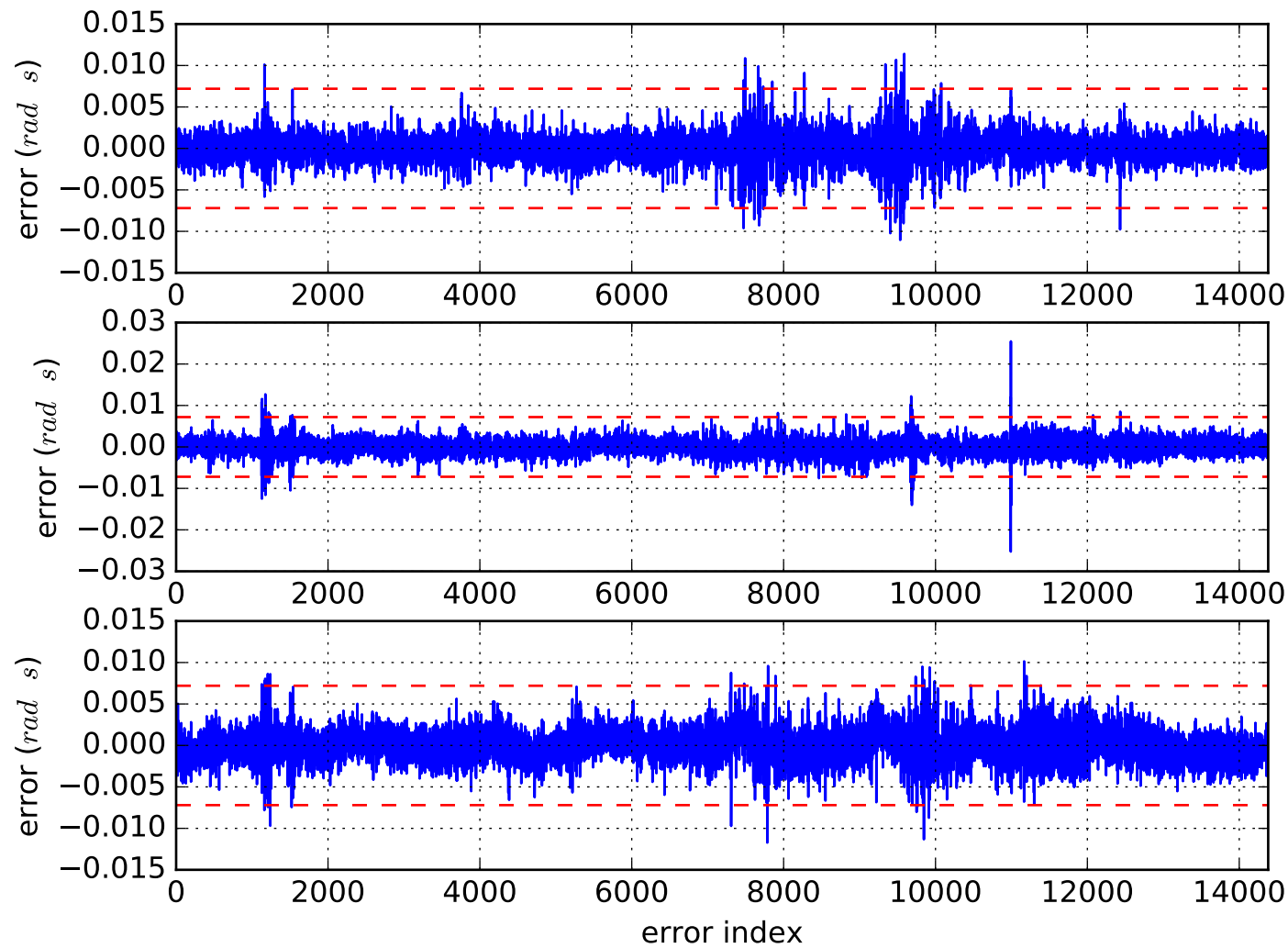
imu0: estimated accelerometer bias (imu frame)



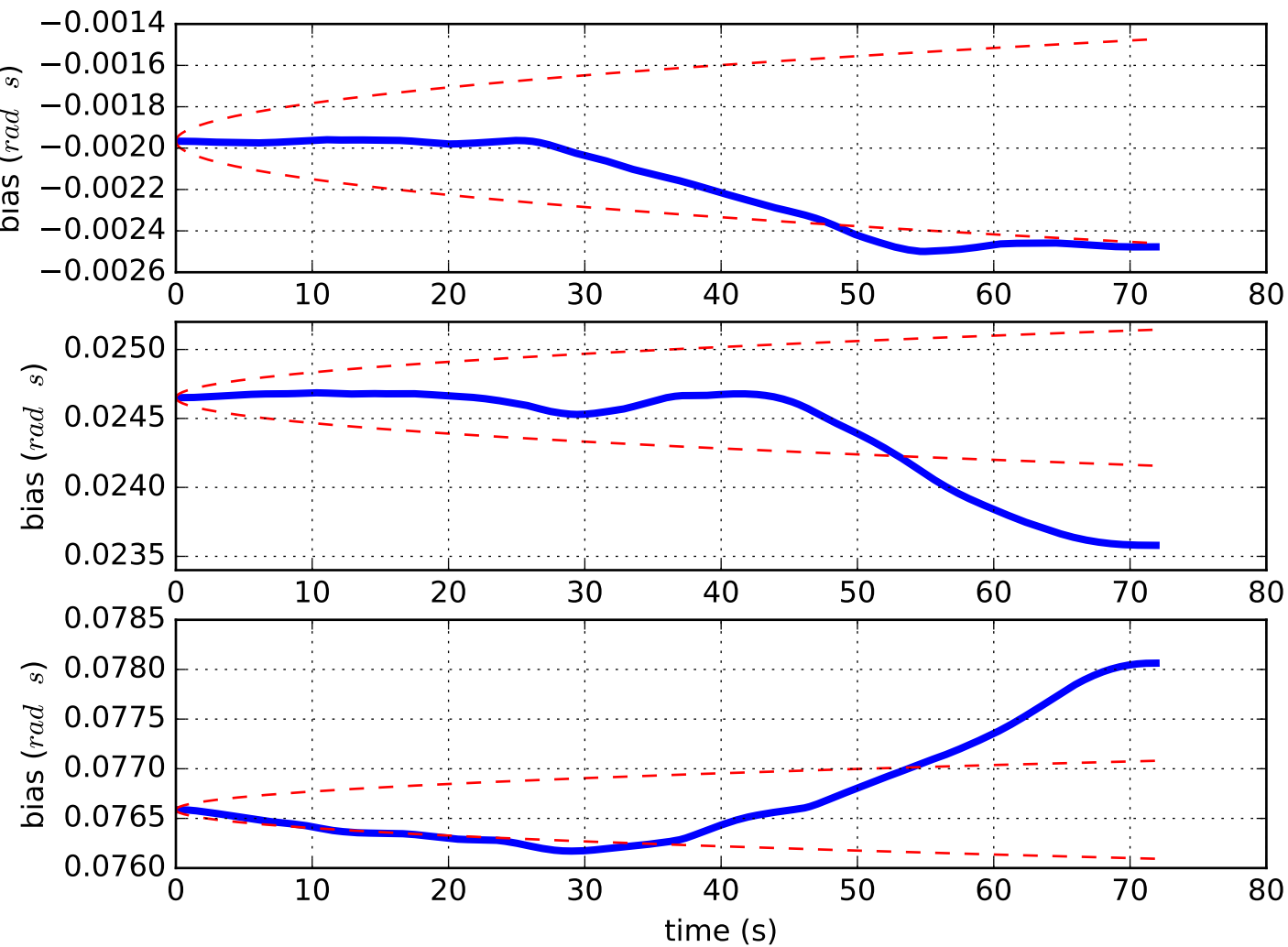
Comparison of predicted and measured angular velocities (body frame)



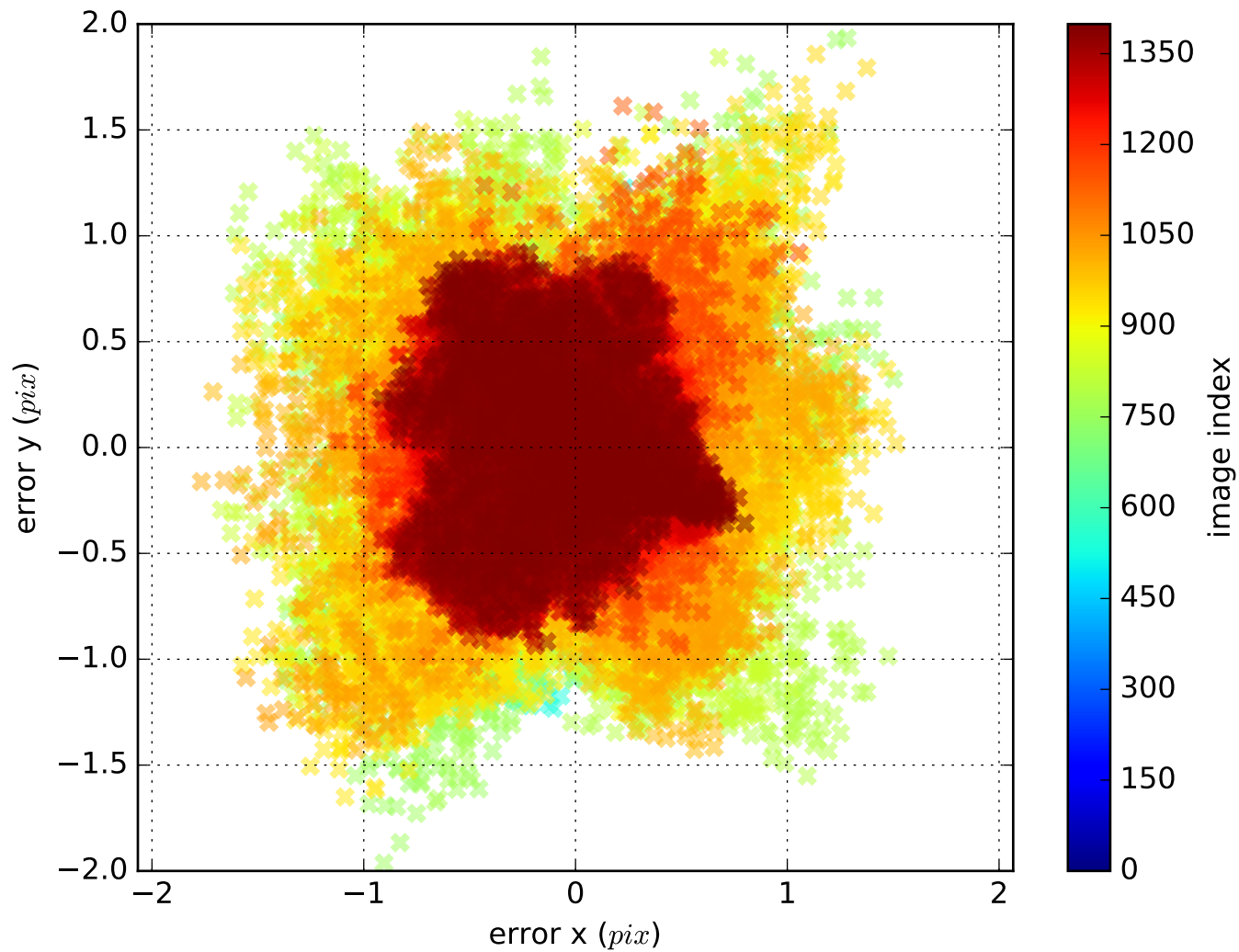
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

