

Calibration results

=====

Normalized Residuals

Reprojection error (cam0): mean 0.0908947220264, median 0.0868584939052, std: 0.0456850388856
Reprojection error (cam1): mean 0.0915292807528, median 0.0867991961773, std: 0.046488446112
Gyroscope error (imu0): mean 0.492342192021, median 0.457460121529, std: 0.260778142524
Accelerometer error (imu0): mean 0.581533060715, median 0.536445175837, std: 0.302571159821

Residuals

Reprojection error (cam0) [px]: mean 0.0908947220264, median 0.0868584939052, std: 0.0456850388856
Reprojection error (cam1) [px]: mean 0.0915292807528, median 0.0867991961773, std: 0.046488446112
Gyroscope error (imu0) [rad/s]: mean 0.00111404320845, median 0.00103511409298, std: 0.000590073577485
Accelerometer error (imu0) [m/s^2]: mean 0.0230275343601, median 0.0212421452079, std: 0.0119812066584

Transformation (cam0):

T_ci: (imu0 to cam0):
[[-0.99952158 0.02971536 -0.00857991 0.0472387]
 [0.00755553 -0.03441555 -0.99937905 -0.04758084]
 [-0.02999219 -0.99896575 0.03417456 -0.0675329]
 [0. 0. 0. 1.]]

T_ic: (cam0 to imu0):
[[-0.99952158 0.00755553 -0.02999219 0.04555014]
 [0.02971536 -0.03441555 -0.99896575 -0.07050429]
 [-0.00857991 -0.99937905 0.03417456 -0.04483808]
 [0. 0. 0. 1.]]

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

0.0

Transformation (cam1):

T_ci: (imu0 to cam1):
[[-0.99951104 0.0303149 -0.00766124 -0.05369563]
 [0.00806141 0.0131001 -0.99988169 -0.04617459]
 [-0.03021095 -0.99945455 -0.01333807 -0.0709156]

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

T_ic: (cam1 to imu0):

```
[[-0.99951104  0.00806141 -0.03021095 -0.05543957]  
 [ 0.0303149  0.0131001 -0.99945455 -0.06864425]  
 [-0.00766124 -0.99988169 -0.01333807 -0.04752638]  
 [ 0.      0.      0.      1.    ]]
```

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

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.9999994 -0.00093865 -0.00056784 -0.10101731]  
 [ 0.00091062  0.99887088 -0.04749885 -0.00189823]  
 [ 0.00061178  0.04749831  0.99887113 -0.00122782]  
 [ 0.      0.      0.      1.    ]]
```

baseline norm: 0.101042603058 [m]

Gravity vector in target coords: [m/s^2]
[0.03438631 -9.69478893 -1.47590926]

Calibration configuration

=====

cam0

Camera model: ds

Focal length: [157.2055832109772, 157.17864541481728]

Principal point: [254.96965839798486, 256.95453864869097]

DS xi: -0.177771183296

DS alpha: 0.592274432037

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: [157.80525776707262, 157.77127301570172]
Principal point: [252.61611413202738, 255.05782001015237]
DS xi: -0.171843932687
DS alpha: 0.593146883609
Distortion model: none
Distortion coefficients: []
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.088 [m]
 Spacing 0.0264 [m]

IMU configuration

=====

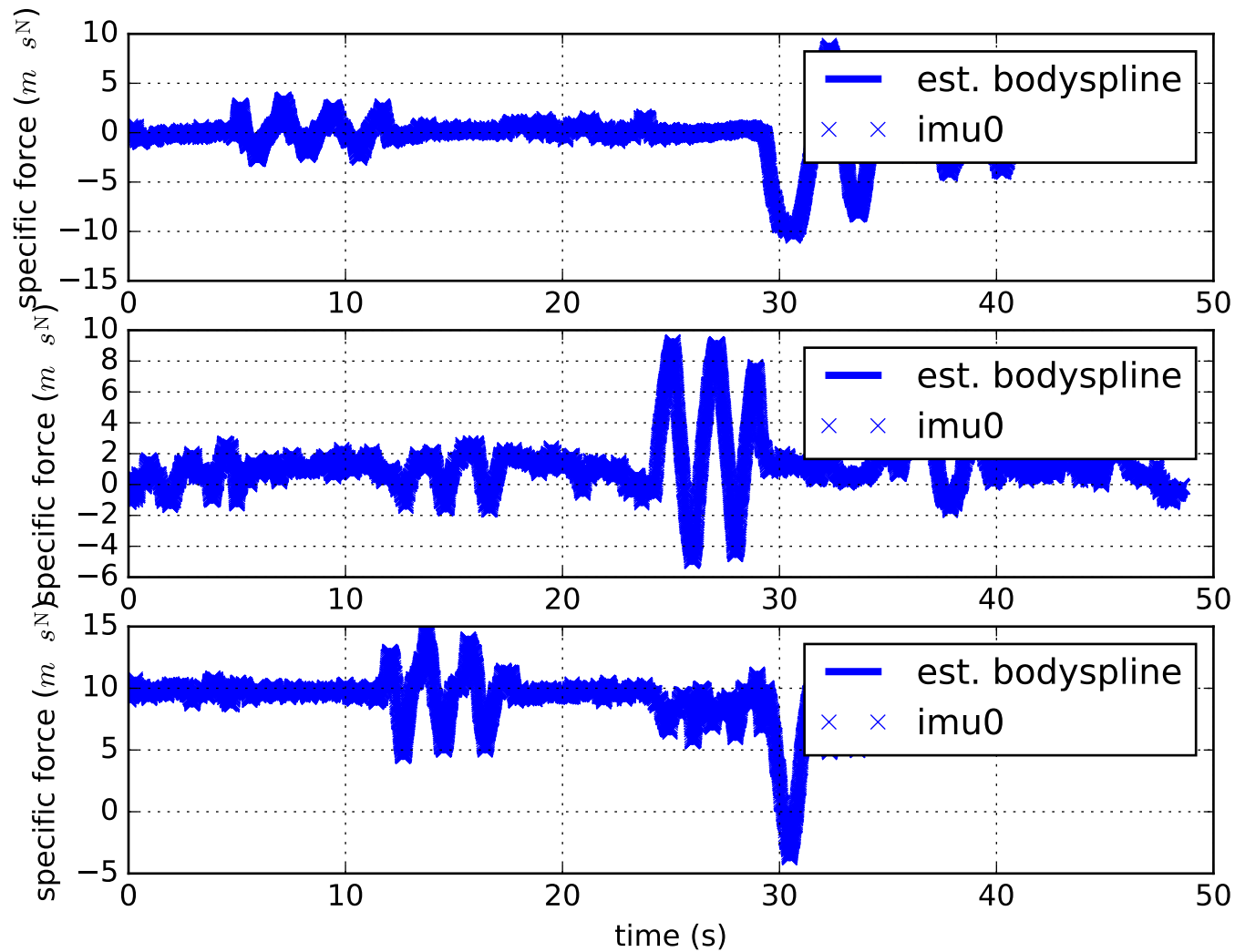
IMU0:

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.]

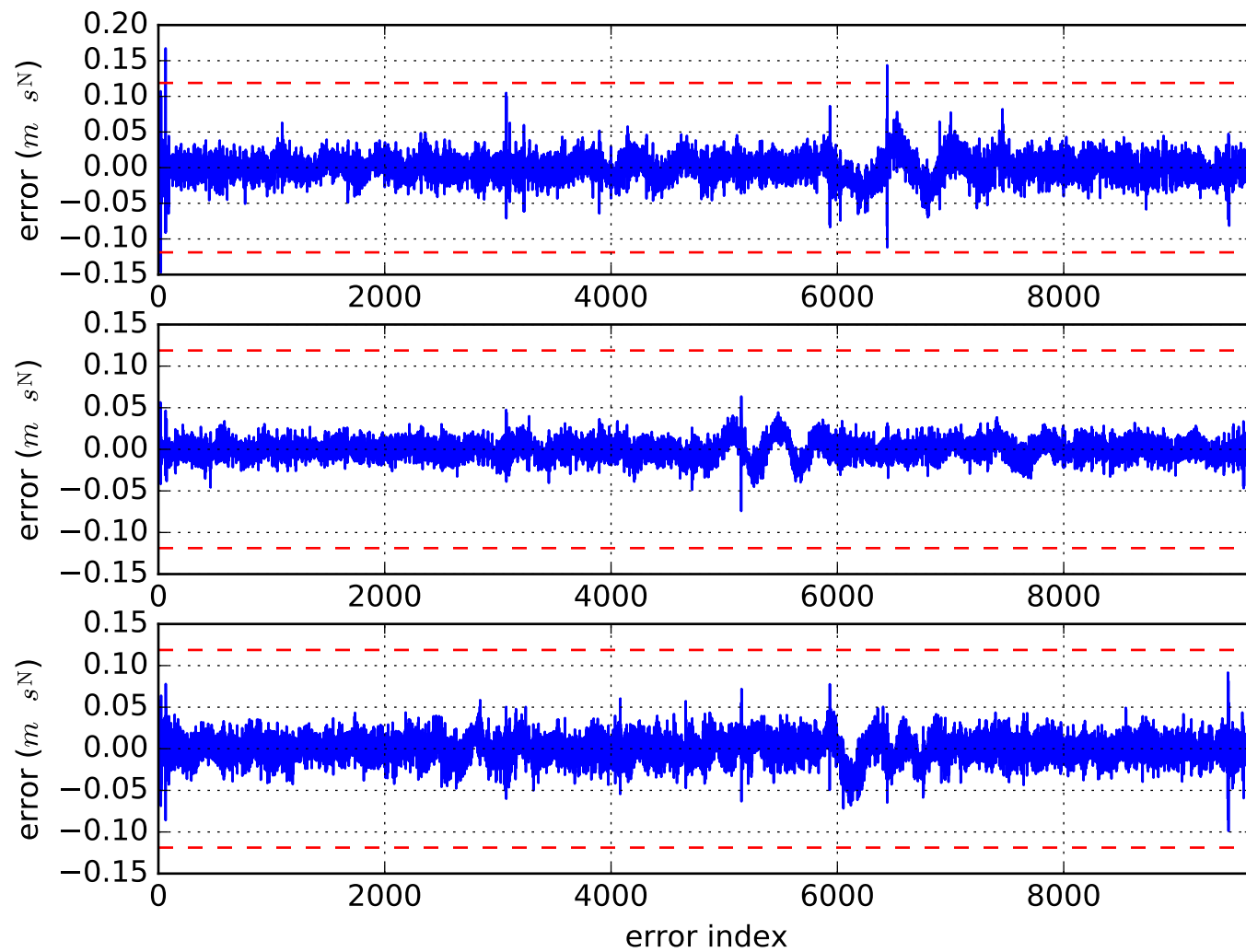
```
[ 0.  1.  0.  0.]  
[ 0.  0.  1.  0.]  
[ 0.  0.  0.  1.]
```

time offset with respect to IMU0: 0.0 [s]

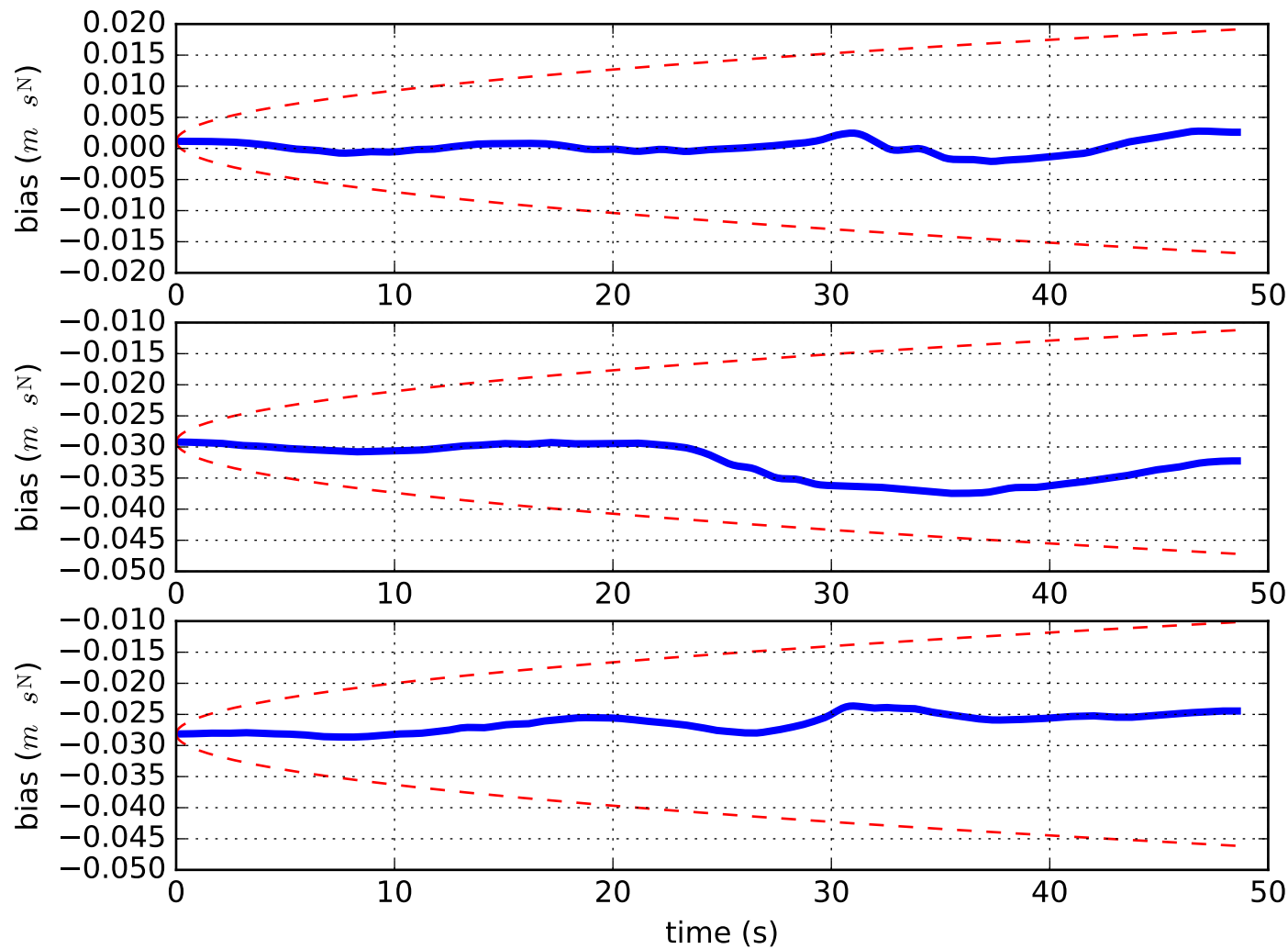
Comparison of predicted and measured specific force (imu0 frame)



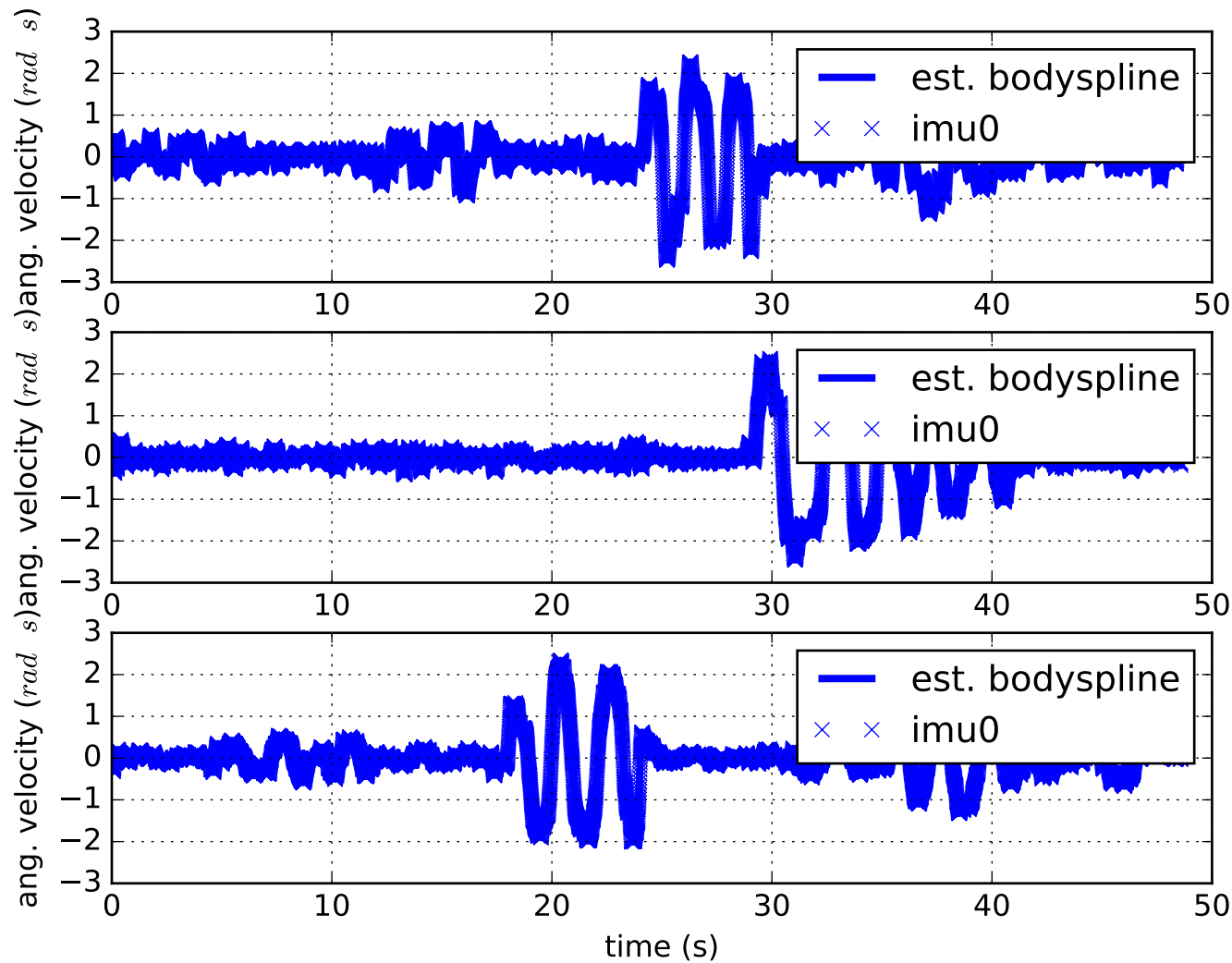
imu0: acceleration error



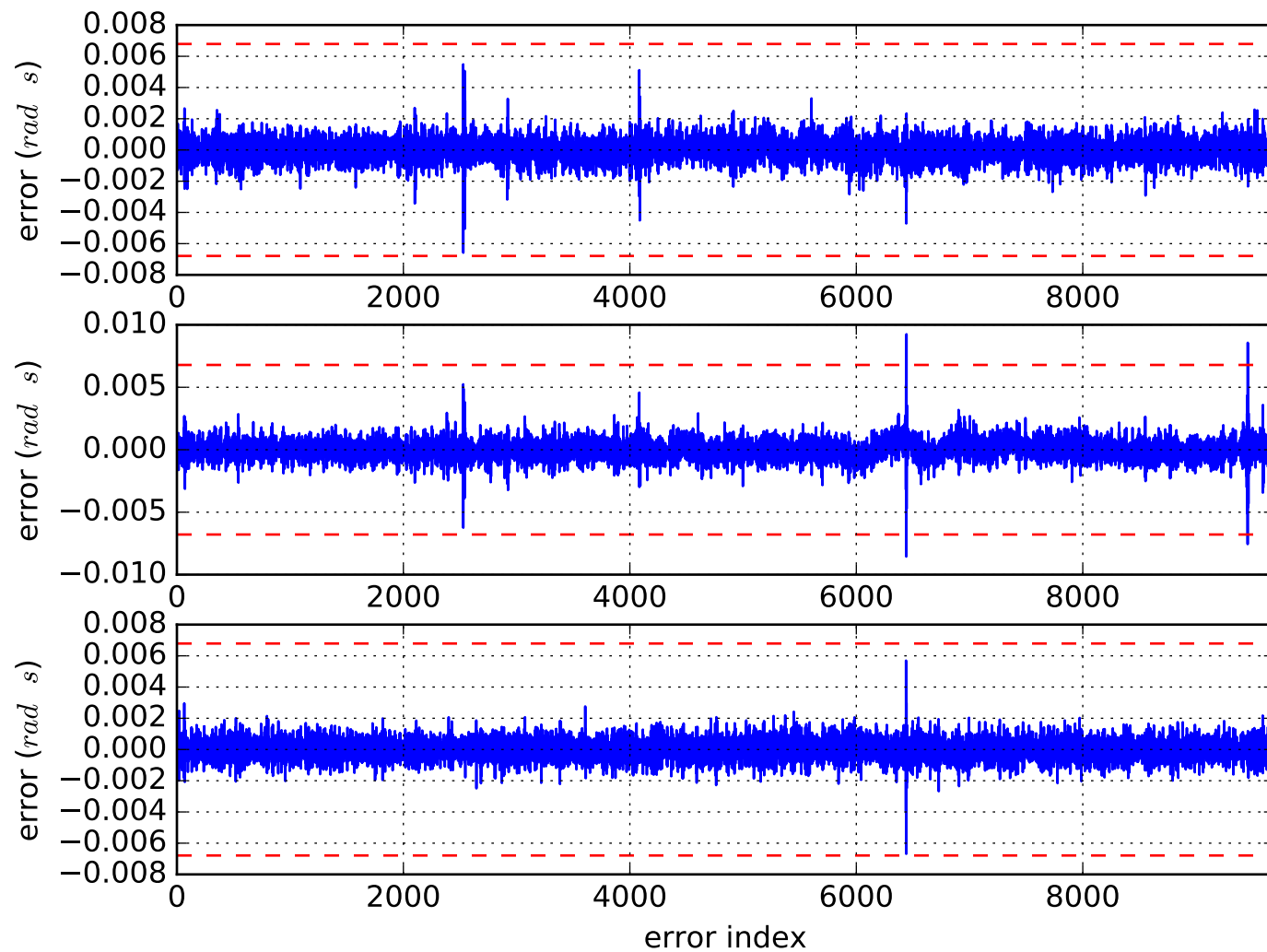
imu0: estimated accelerometer bias (imu frame)



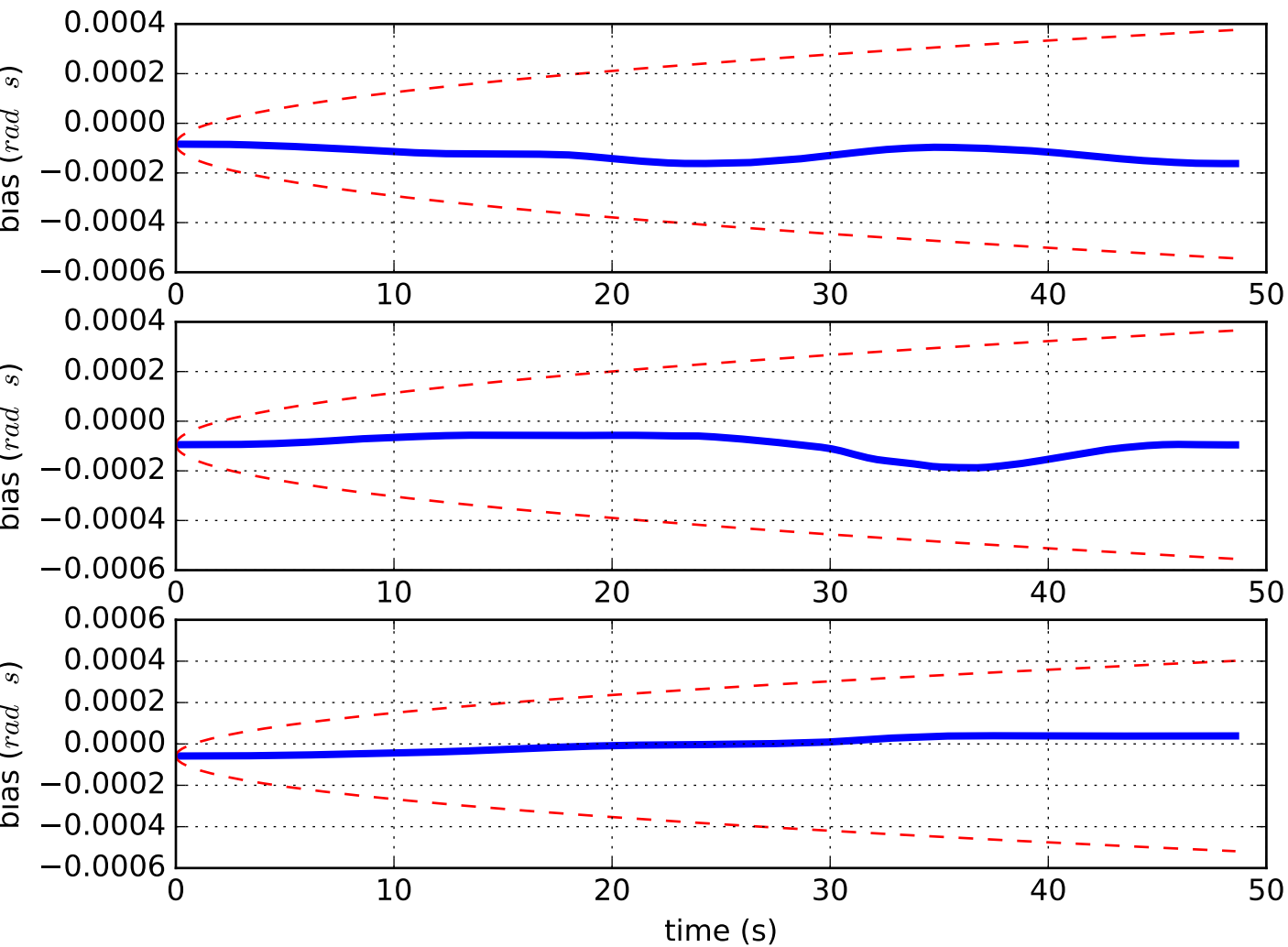
Comparison of predicted and measured angular velocities (body frame)



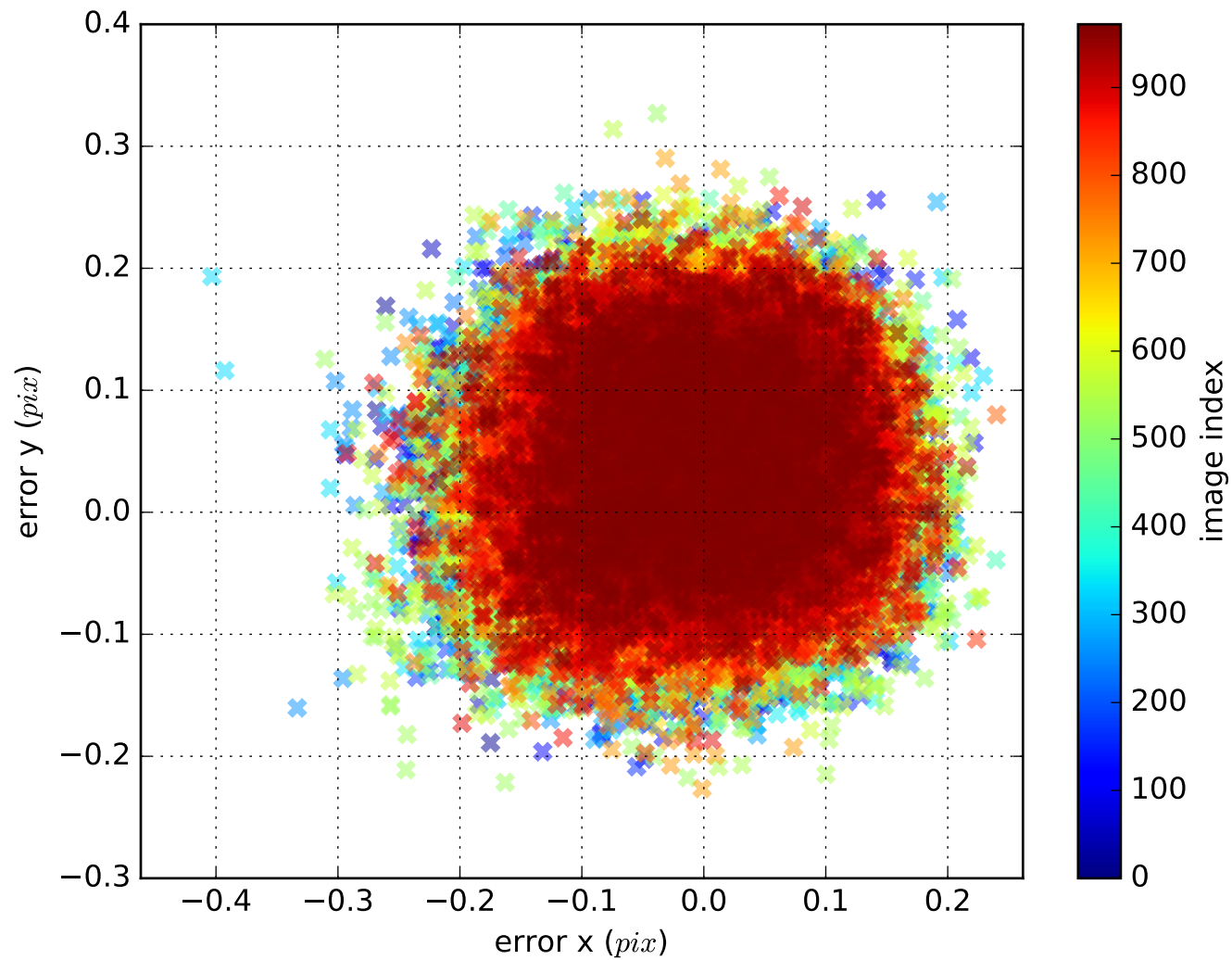
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

