

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.0906904094438, median 0.0817446869359, std: 0.0573723717239

Reprojection error (cam1): mean 0.0900673432922, median 0.0799293904456, std: 0.055618208787

Gyroscope error (imu0): mean 0.218379902213, median 0.160078253657, std: 0.192680716437

Accelerometer error (imu0): mean 0.179822312749, median 0.142357101016, std: 0.133900235924

Residuals

Reprojection error (cam0) [px]: mean 0.0906904094438, median 0.0817446869359, std: 0.0573723717239

Reprojection error (cam1) [px]: mean 0.0900673432922, median 0.0799293904456, std: 0.055618208787

Gyroscope error (imu0) [rad/s]: mean 0.00914154025602, median 0.00670099118593, std: 0.00806575379885

Accelerometer error (imu0) [m/s^2]: mean 0.0663741670652, median 0.0525453925116, std: 0.0494238812383

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.99991715 0.0126912 -0.00214928 0.00175203]
 [-0.0127019 0.99990662 -0.00504173 -0.00925565]
 [ 0.0020851 0.00506861 0.99998498 -0.02011331]
 [ 0.        0.        0.        1.      ]]
```

T_ic: (cam0 to imu0):

```
[[-0.99991715 -0.0127019  0.0020851 -0.00182752]
 [ 0.0126912  0.99990662  0.00506861  0.0093345 ]
 [-0.00214928 -0.00504173  0.99998498  0.02007011]
 [ 0.        0.        0.        1.      ]]
```

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

-0.00676856155724

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[[-0.99992072 0.01231662 -0.00261822 -0.04837975]
 [-0.01232621 0.99991726 -0.00367847 -0.00952481]
 [ 0.0025727 0.00371045 0.99998981 -0.02116249]
```

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

T_ic: (cam1 to imu0):

```
[[ 0.99992072 -0.01232621  0.0025727  0.04831296]
 [ 0.01231662  0.99991726  0.00371045  0.01019842]
 [-0.00261822 -0.00367847  0.99998981  0.02100057]
 [ 0.     0.     0.     1.     ]]
```

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

```
-0.00675554702242
```

Baselines:

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Baseline (cam0 to cam1):

```
[[ 0.99999982 -0.00037223 -0.00047083 -0.0501447 ]
 [ 0.00037287  0.999999  0.00136408 -0.00024239]
 [ 0.00047032 -0.00136425  0.99999896 -0.00106265]
 [ 0.     0.     0.     1.     ]]
baseline norm: 0.0501565475933 [m]
```

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

```
[ 0.17830769 -9.76857662  0.84352838]
```

Calibration configuration

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cam0

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Camera model: pinhole

Focal length: [384.45179643973404, 384.78523859874434]

Principal point: [322.2480691442894, 246.4911371288146]

Distortion model: radtan

Distortion coefficients: [0.003022672106865009, 0.009522466105805063, 0.002871855121949081, 0.00013495045969115333]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.03 [m]

Spacing 0.009 [m]

cam1

Camera model: pinhole
Focal length: [383.79939184713237, 383.95551659425746]
Principal point: [322.6554246231207, 246.17350031270774]
Distortion model: radtan
Distortion coefficients: [0.0033094627508105895, 0.0028500564784450853, 0.001308633880489102, 0.0004804464806785611]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.03 [m]
Spacing 0.009 [m]

IMU configuration

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IMU0:

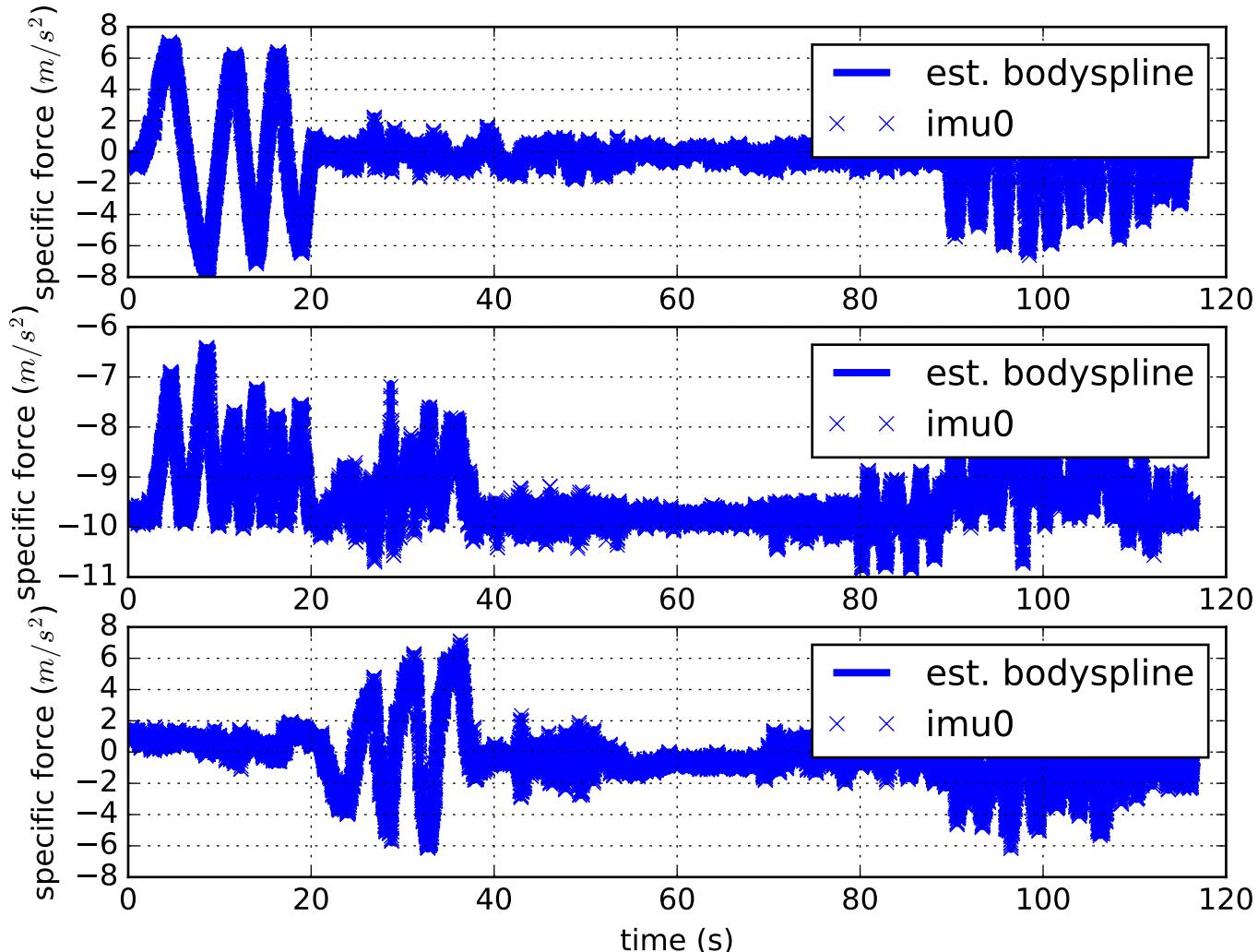
Model: calibrated
Update rate: 200.0
Accelerometer:
Noise density: 0.0261
Noise density (discrete): 0.369109739779
Random walk: 0.000657
Gyroscope:
Noise density: 0.00296
Noise density (discrete): 0.0418607214462
Random walk: 1.7e-05

T_i_b

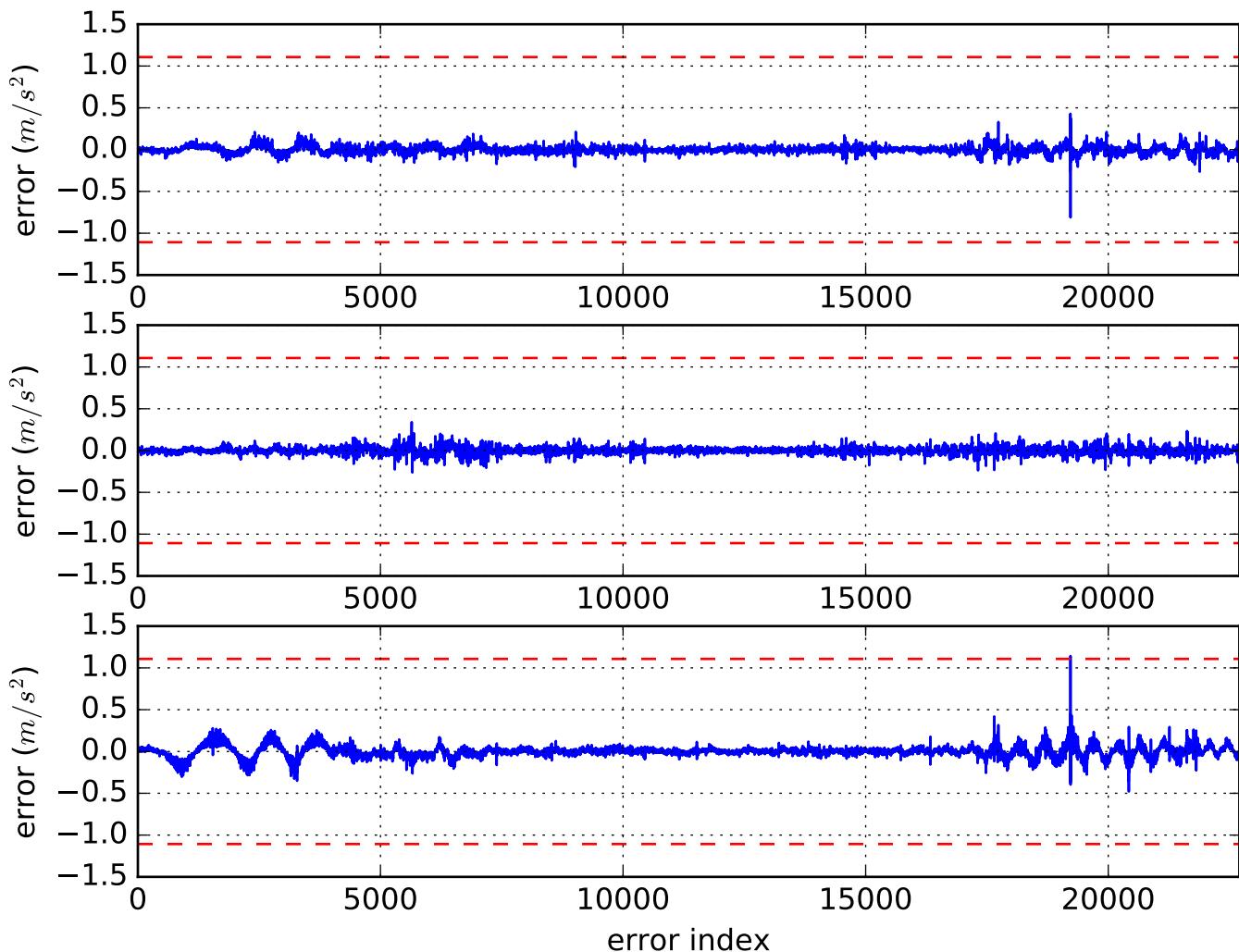
[[1. 0. 0. 0.]
[0. 1. 0. 0.]
[0. 0. 1. 0.]
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

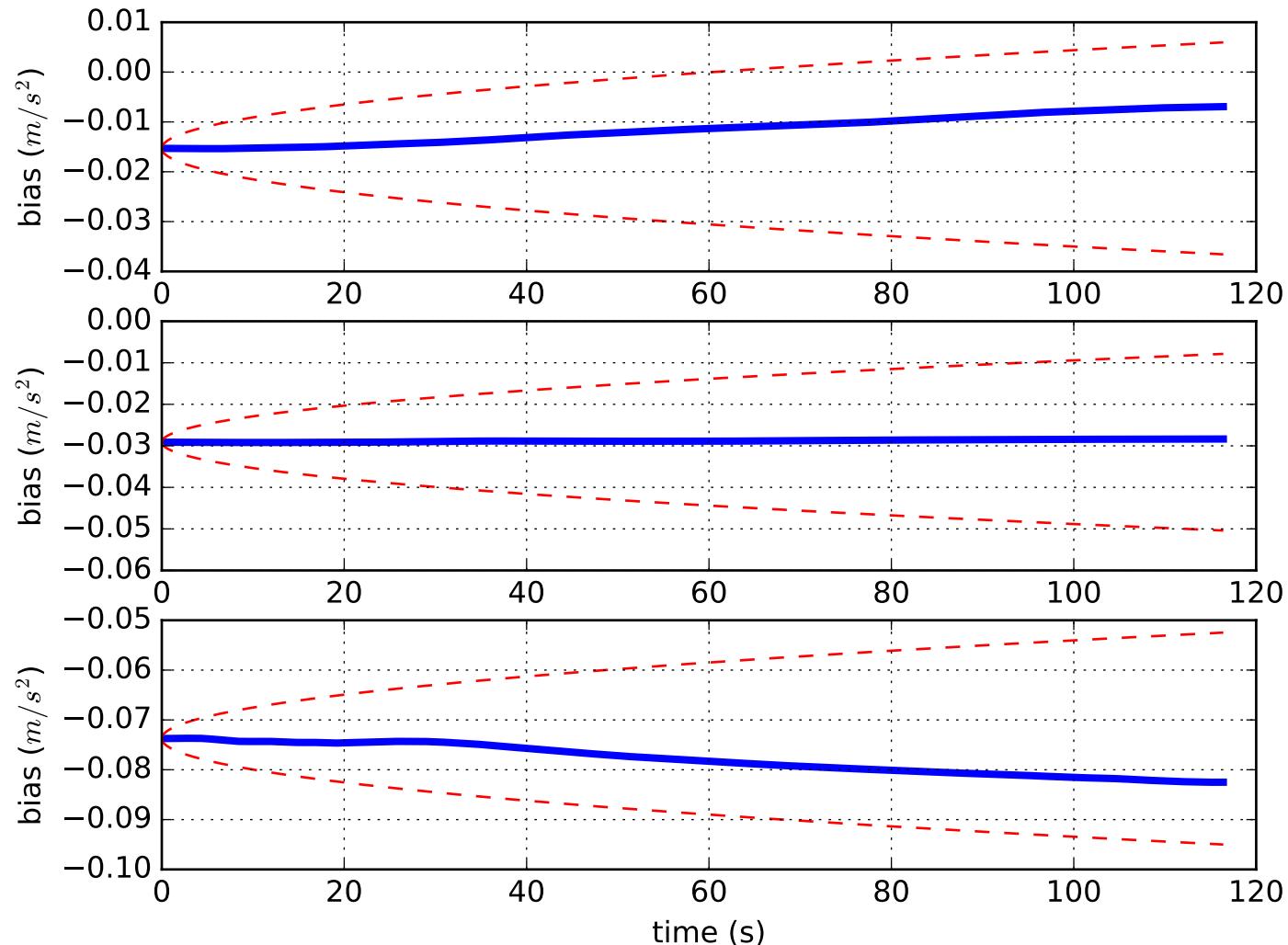
Comparison of predicted and measured specific force (imu0 frame)



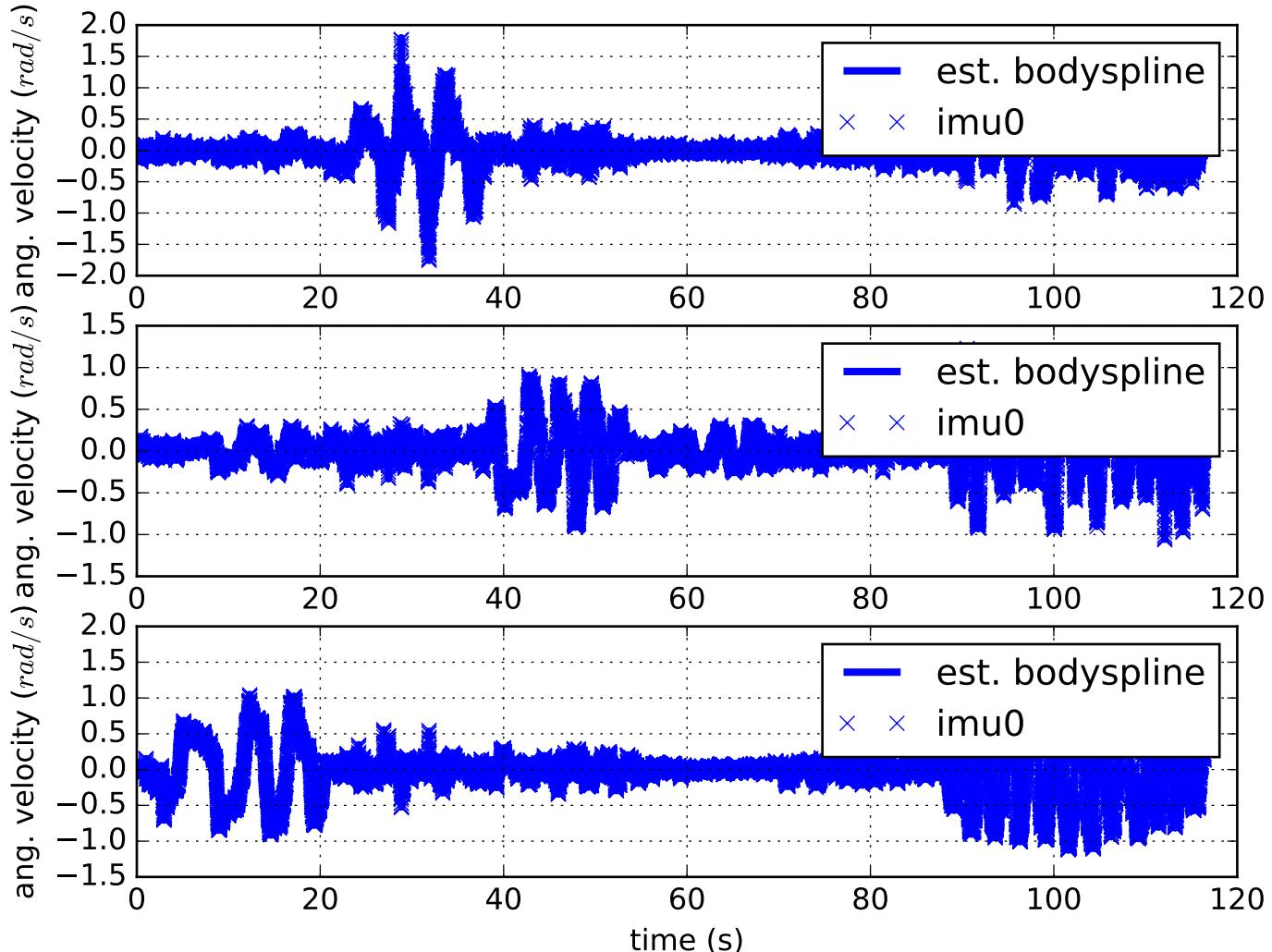
imu0: acceleration error



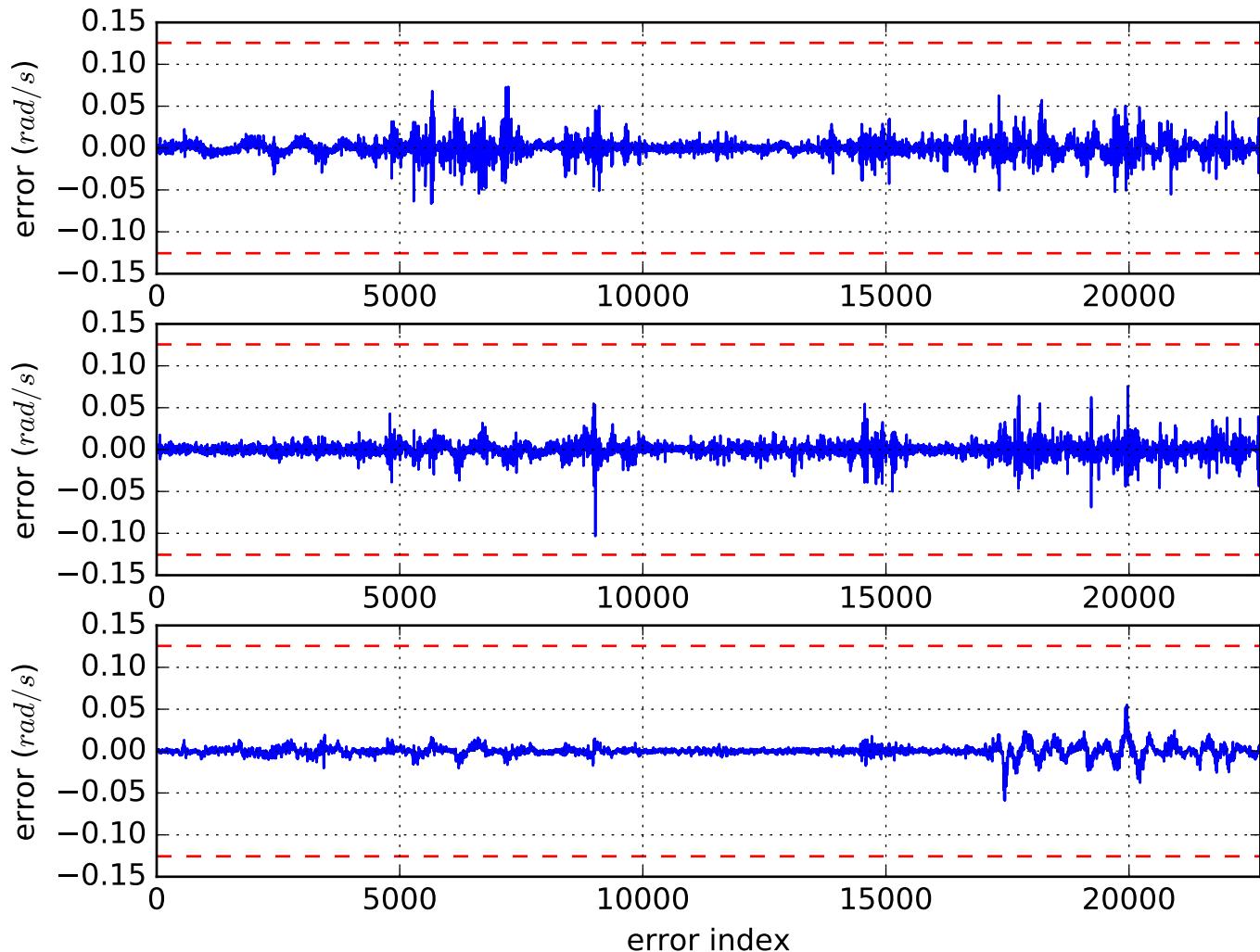
imu0: estimated accelerometer bias (imu frame)



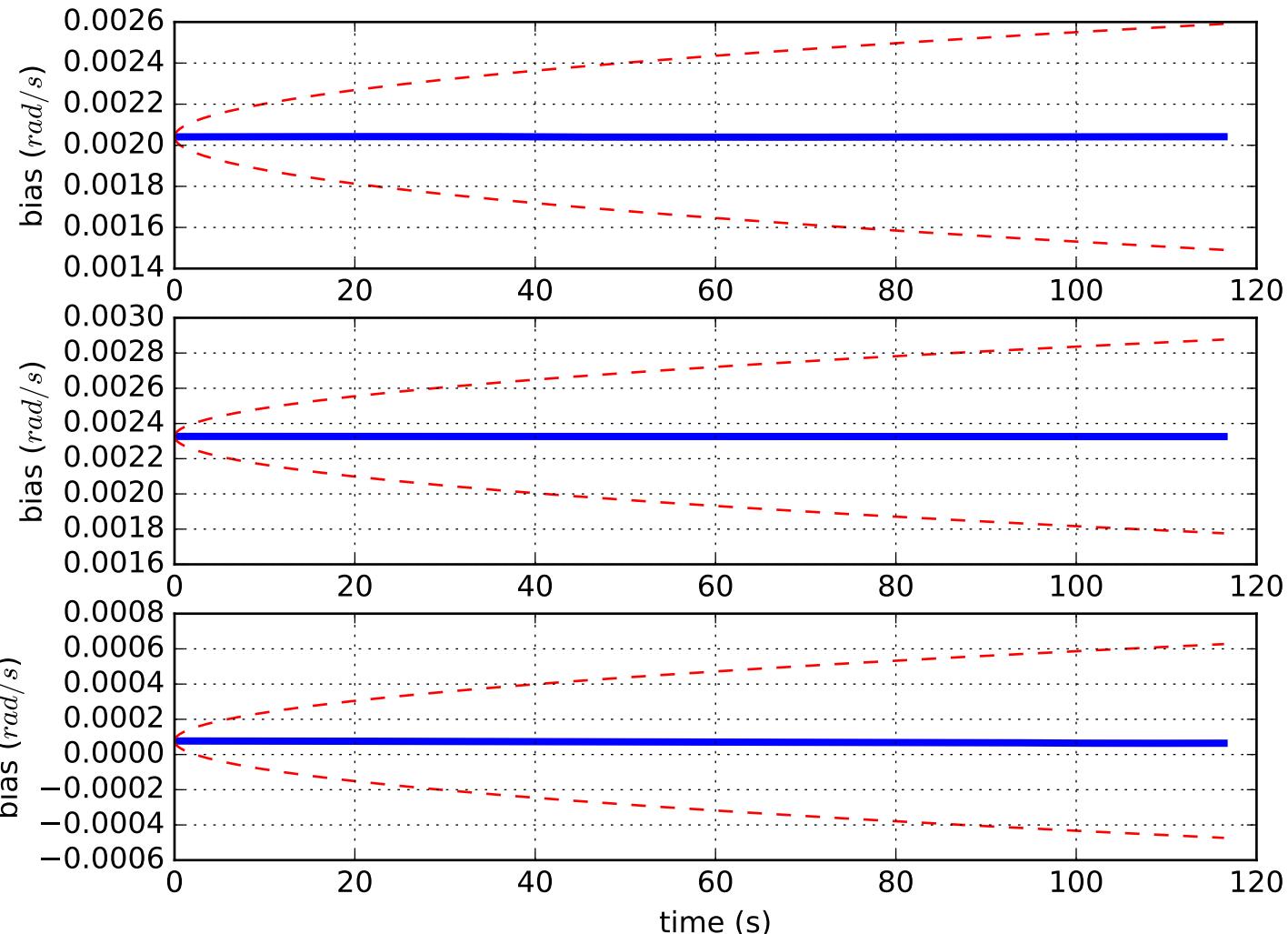
Comparison of predicted and measured angular velocities (body frame)



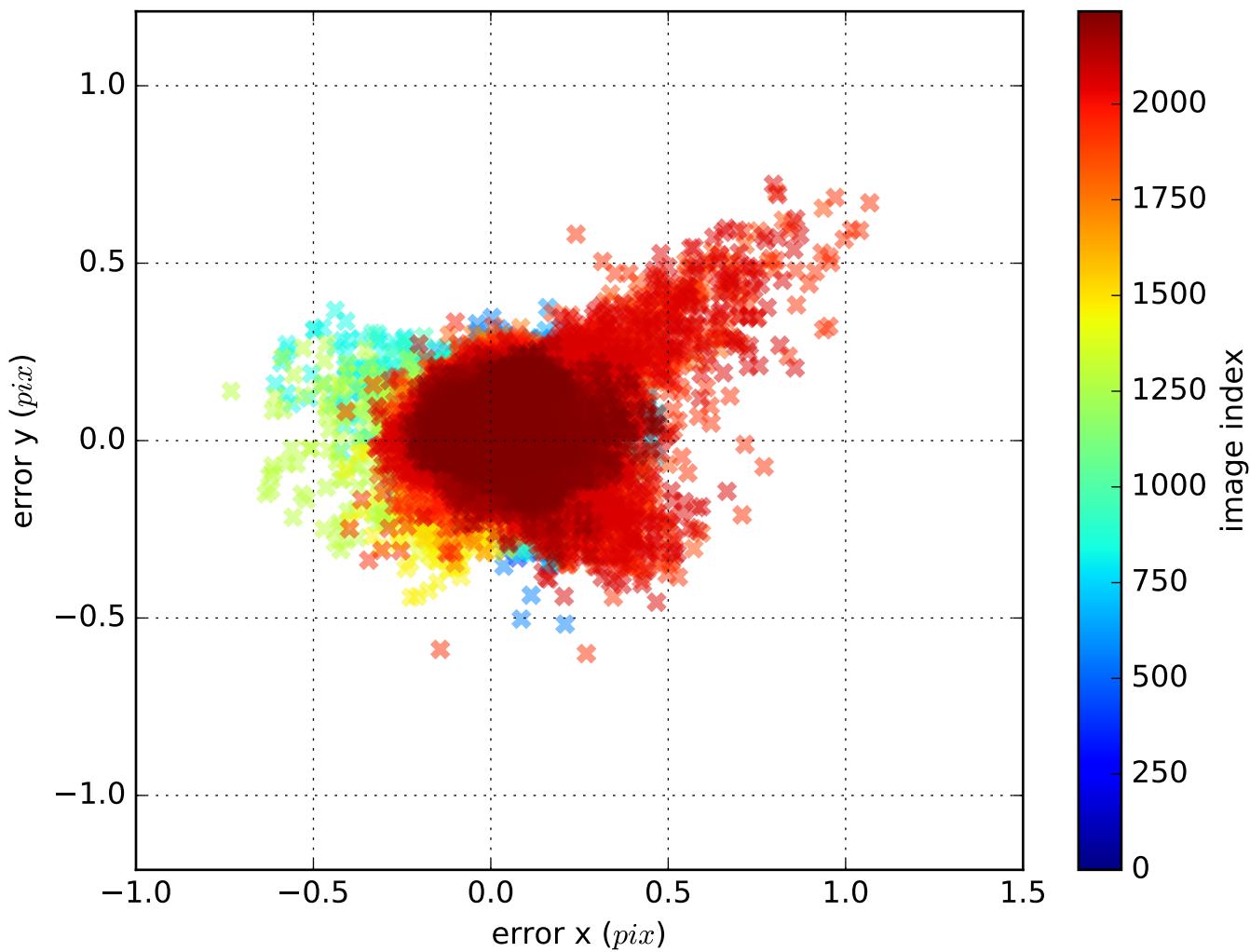
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

