

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.0745456320534, median 0.0715396044333, std: 0.0370216650922
Reprojection error (cam1): mean 0.0758872135676, median 0.0732205148342, std: 0.0369640130979
Gyroscope error (imu0): mean 0.268069216019, median 0.264315413357, std: 0.100578939342
Accelerometer error (imu0): mean 0.11420563569, median 0.0930772475142, std: 0.0908091754718

Residuals

Reprojection error (cam0) [px]: mean 0.0745456320534, median 0.0715396044333, std: 0.0370216650922
Reprojection error (cam1) [px]: mean 0.0758872135676, median 0.0732205148342, std: 0.0369640130979
Gyroscope error (imu0) [rad/s]: mean 0.0110159084667, median 0.0108616514911, std: 0.00413314294691
Accelerometer error (imu0) [m/s^2]: mean 0.0166059497246, median 0.0135337987778, std: 0.0132040121602

Transformation (cam0):

T_ci: (imu0 to cam0):
[[-0.00037851 0.99999982 -0.00047506 0.04611976]
 [-0.99999581 -0.00037987 -0.00287033 0.00186828]
 [-0.00287051 0.00047397 0.99999577 -0.05562867]
 [0. 0. 0. 1.]]

T_ic: (cam0 to imu0):
[[-0.00037851 -0.99999581 -0.00287051 0.00172604]
 [0.99999982 -0.00037987 0.00047397 -0.04609267]
 [-0.00047506 -0.00287033 0.99999577 0.05565571]
 [0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
-0.000251632744979

Transformation (cam1):

T_ci: (imu0 to cam1):
[[-0.00222218 0.99994777 -0.00997627 -0.0734962]
 [-0.99999752 -0.00222323 -0.00009434 0.00187235]
 [-0.00011651 0.00997603 0.99995023 -0.05567077]

[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):

```
[[ -0.00222218 -0.99999752 -0.00011651 0.00170254]
 [ 0.99994777 -0.00222323 0.00997603 0.0740519 ]
 [-0.00997627 -0.00009434 0.99995023 0.05493496]
 [ 0. 0. 0. 1. ]]
```

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
-0.000240719634254

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99995316 0.00187096 -0.0094959 -0.12014554]
 [-0.00184468 0.99999445 0.00277511 0.00024353]
 [ 0.00950104 -0.00275746 0.99995106 -0.00047785]
 [ 0. 0. 0. 1. ]]
```

baseline norm: 0.120146733298 [m]

Gravity vector in target coords: [m/s²]
[-2.03943086 -9.25514521 -2.52020471]

Calibration configuration

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cam0

Camera model: omni

Focal length: [1224.6383872702197, 1225.219474485842]

Principal point: [363.42564453936853, 240.84254605833092]

Omni xi: 2.32852474096

Distortion model: radtan

Distortion coefficients: [-0.0859081400120652, 0.6234246896541703, 0.0015247703262438249, -0.0006377538900873697]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.055 [m]
Spacing 0.0165 [m]

cam1

Camera model: omni
Focal length: [1236.4949607977562, 1237.1502783092985]
Principal point: [379.7524668526054, 245.71735009655353]
Omni xi: 2.36354963842
Distortion model: radtan
Distortion coefficients: [-0.06568799819683696, 0.5463747365086091, -9.69085388707951e-05, 0.0005016723801325513]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.055 [m]
 Spacing 0.0165 [m]

IMU configuration

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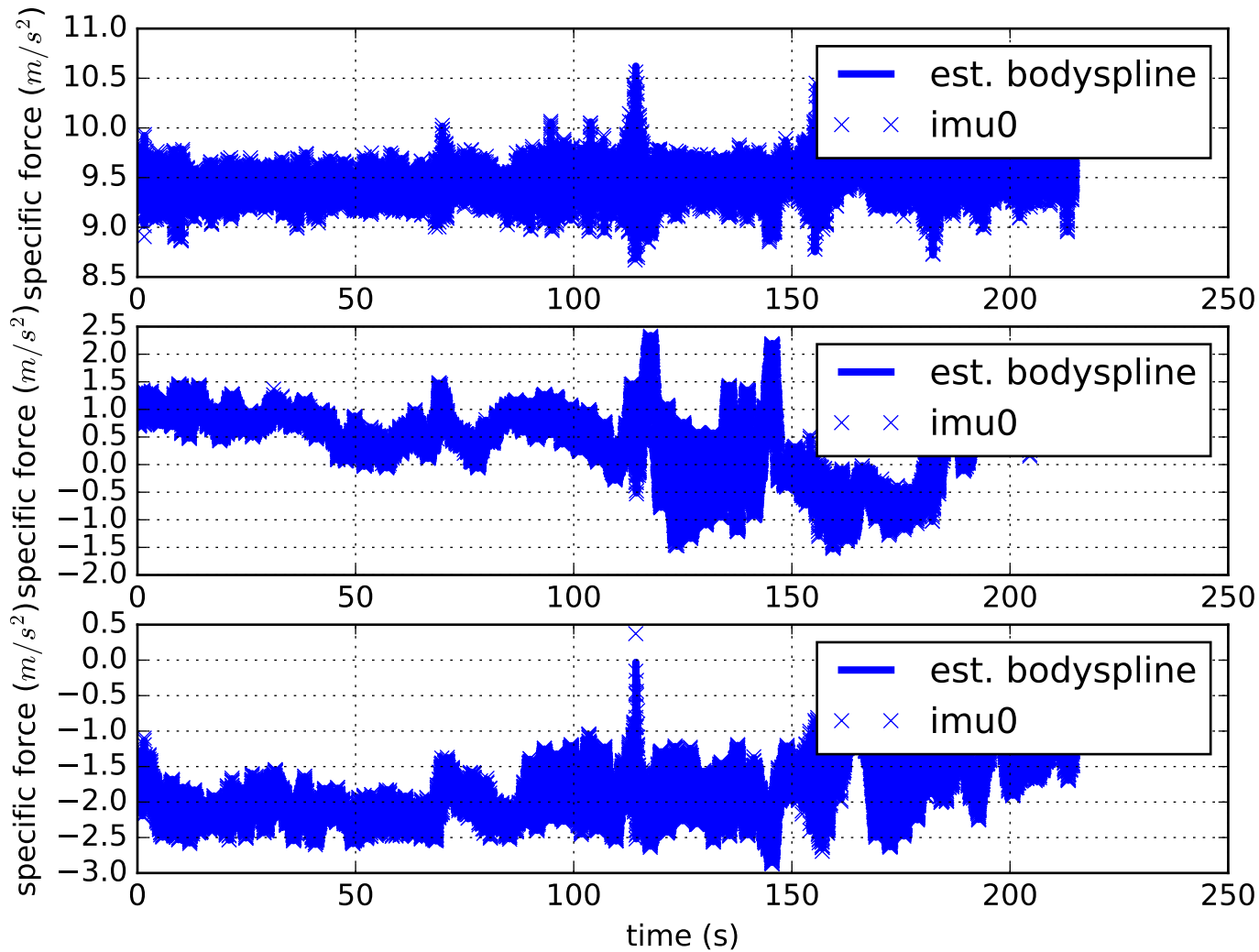
IMU0:

Model: calibrated
Update rate: 200.0
Accelerometer:
 Noise density: 0.0102816113998
 Noise density (discrete): 0.145403942846
 Random walk: 0.000215682970522
Gyroscope:
 Noise density: 0.0029057508704
 Noise density (discrete): 0.041093522898
 Random walk: 8.46079583185e-05

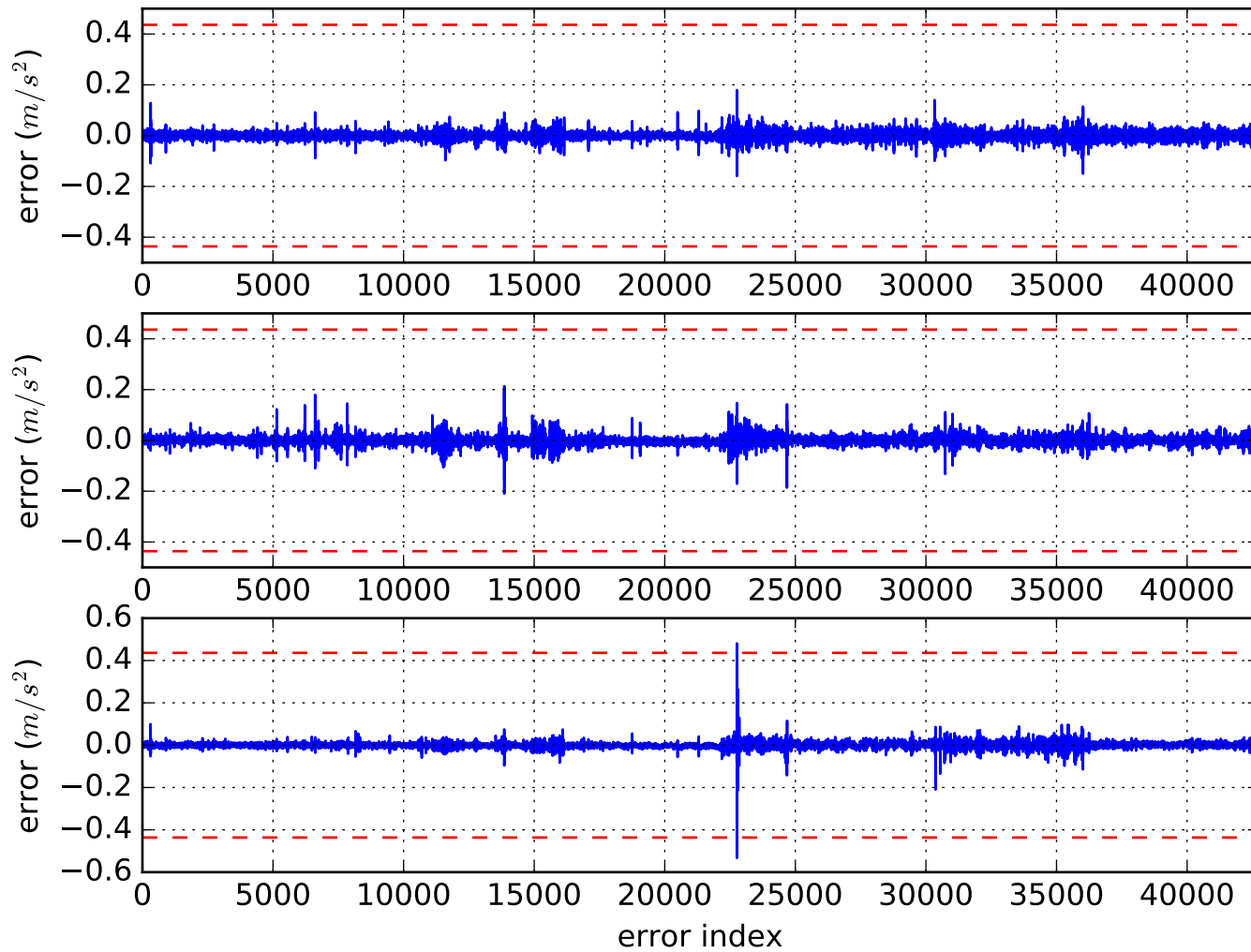
T_i_b
[[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]

[0. 0. 0. 1.]
time offset with respect to IMU0: 0.0 [s]

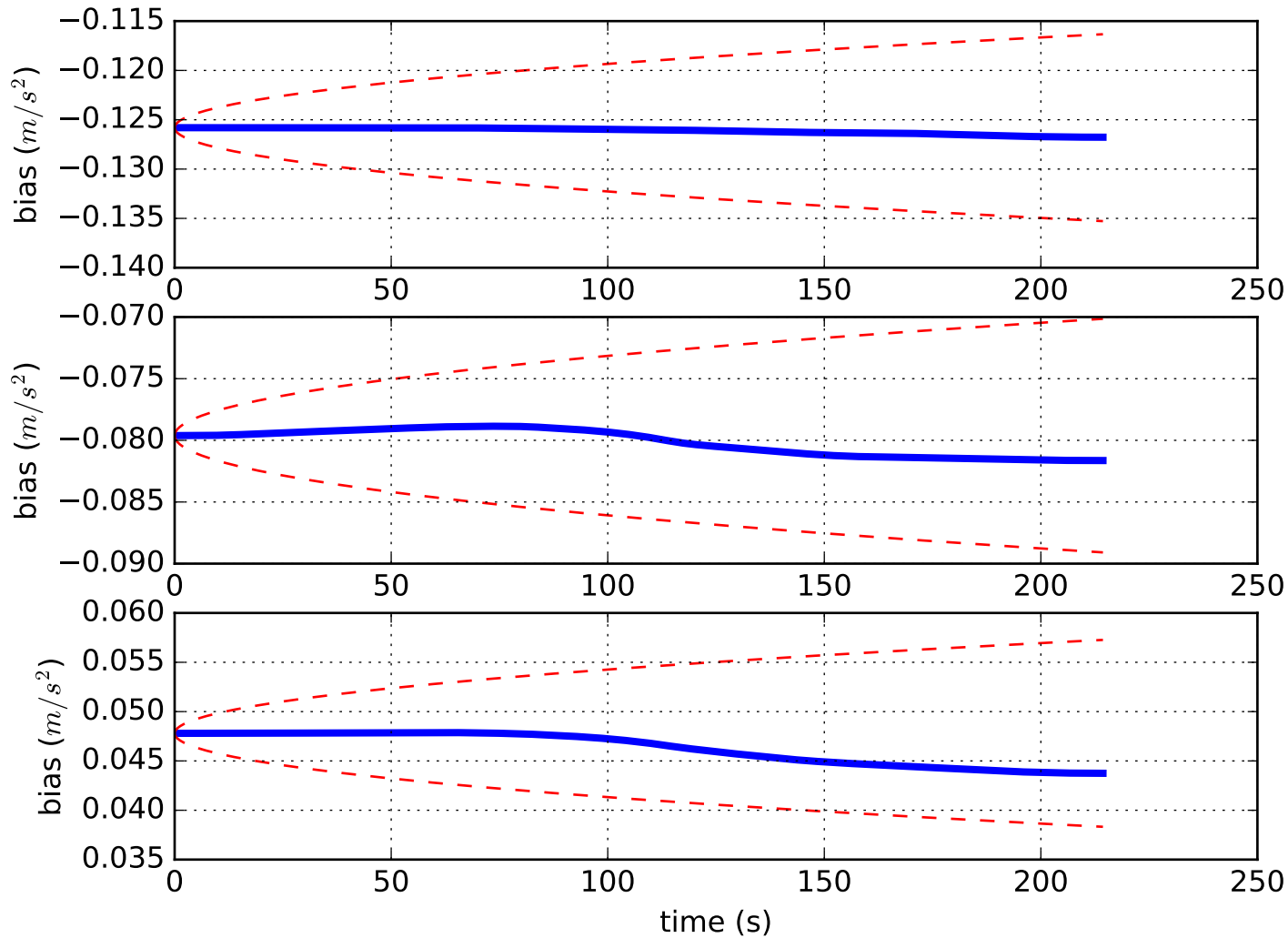
Comparison of predicted and measured specific force (imu0 frame)



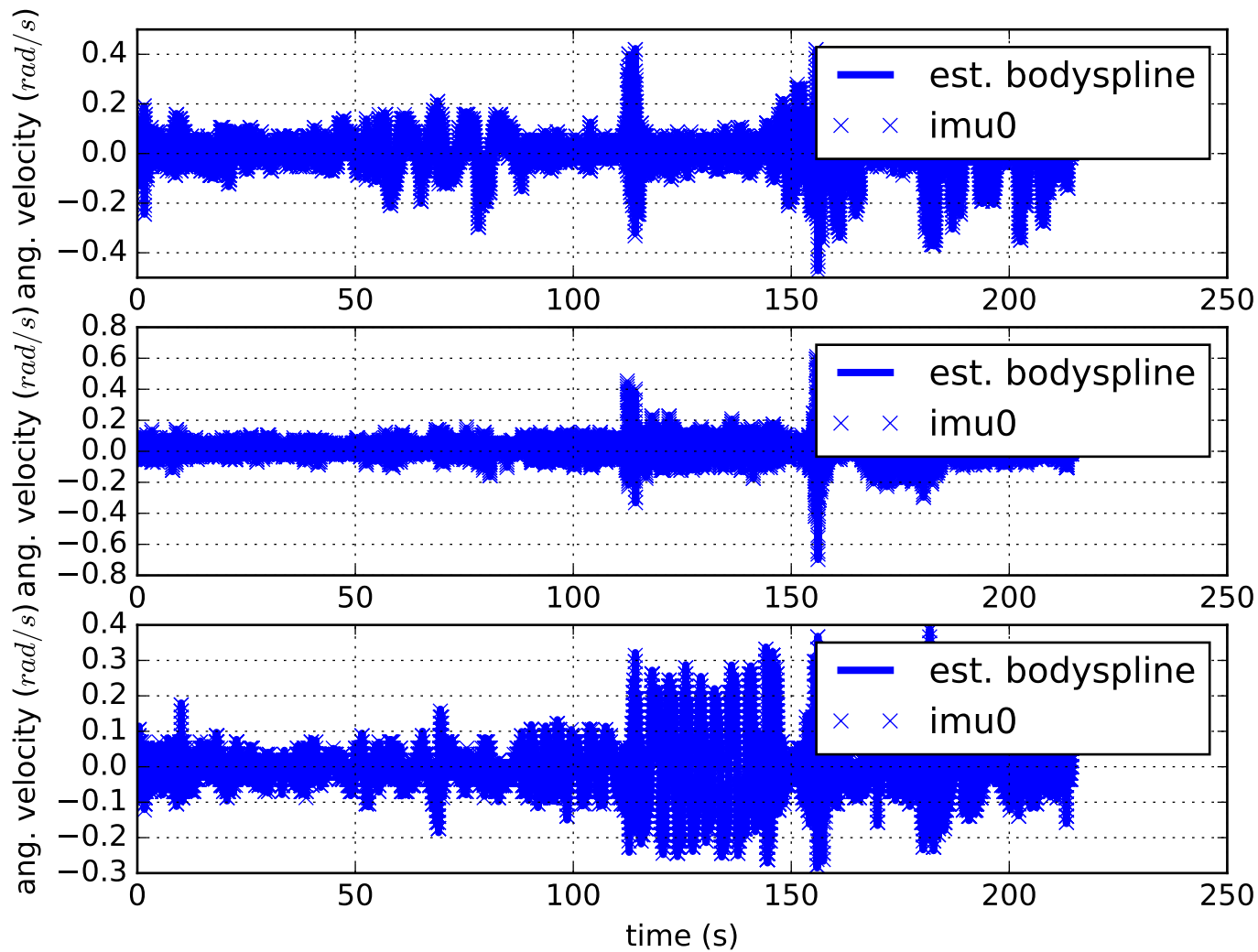
imu0: acceleration error



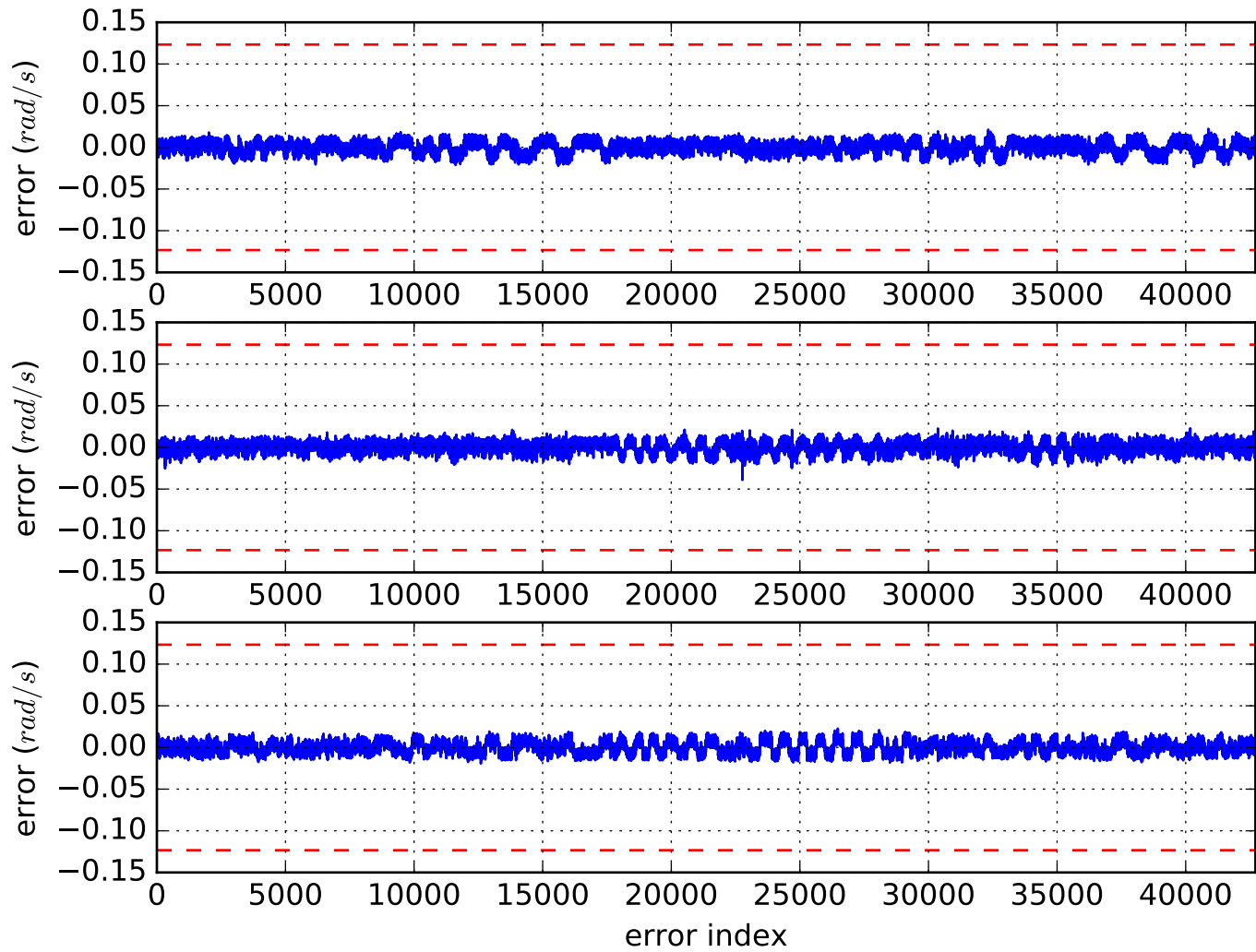
imu0: estimated accelerometer bias (imu frame)



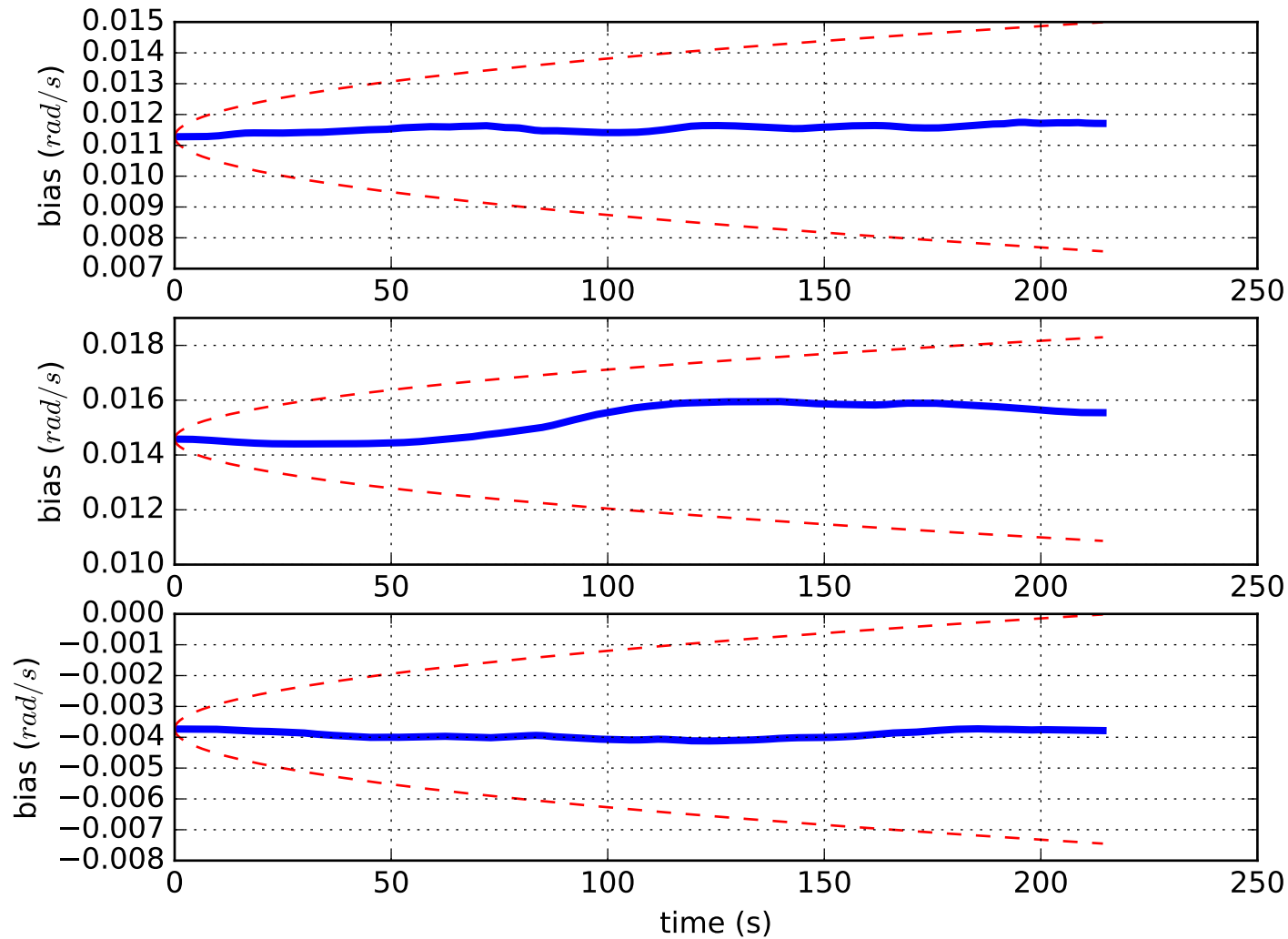
Comparison of predicted and measured angular velocities (body frame)



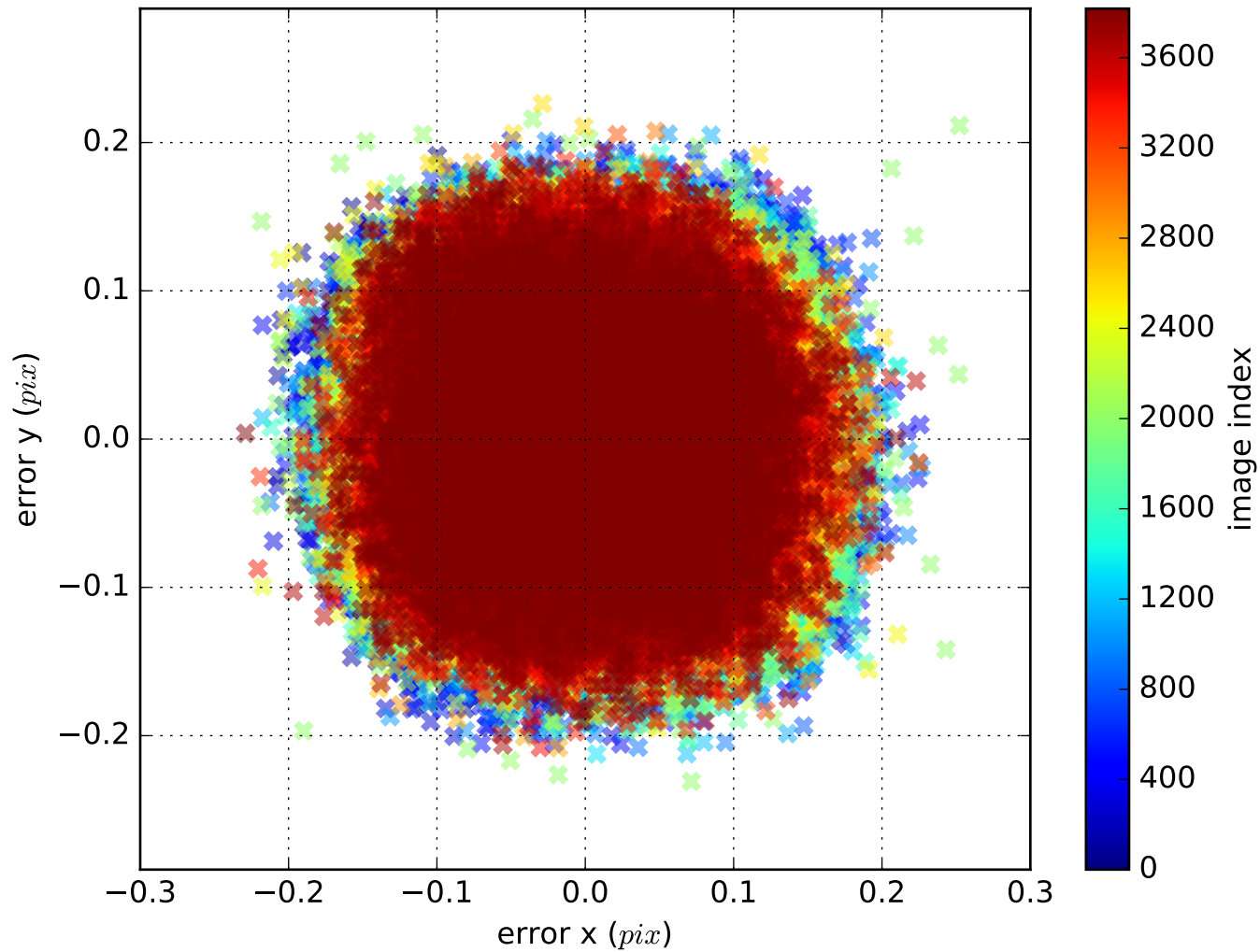
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

