

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 1.12873945377, median 0.650229614101, std: 1.51330143444

Gyroscope error (imu0): mean 1.75399851672, median 1.43271738023, std: 1.4409176847

Accelerometer error (imu0): mean 1.49679031313, median 0.853327918476, std: 1.8007723652

Residuals

Reprojection error (cam0) [px]: mean 1.12873945377, median 0.650229614101, std: 1.51330143444

Gyroscope error (imu0) [rad/s]: mean 0.00496105698145, median 0.00405233670035, std: 0.00407553066392

Accelerometer error (imu0) [m/s^2]: mean 0.169342492869, median 0.0965430332368, std: 0.203734136129

Transformation (cam0):

T_ci: (imu0 to cam0):

[[-0.00441432 -0.00580622 0.9999734 0.03686828]
[0.01081909 -0.99992489 -0.00575818 0.01364214]
[0.99993173 0.01079338 0.00447681 0.0599412]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[-0.00441432 0.01081909 0.99993173 -0.05992196]
[-0.00580622 -0.99992489 0.01079338 0.01320821]
[0.9999734 -0.00575818 0.00447681 -0.03705709]
[0. 0. 0. 1.]]

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

-0.016937641078230425

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

[0.01585887 -9.52664423 -2.32620317]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [303.77309865427696, 304.0950973658568]
Principal point: [356.53432960587475, 284.22026216934006]
Distortion model: equidistant
Distortion coefficients: [0.024692628780321853, 0.006954772245689177, 0.0001350267061274049, 0.0016039473873433027]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.055 [m]
 Spacing 0.01833333315 [m]

IMU configuration

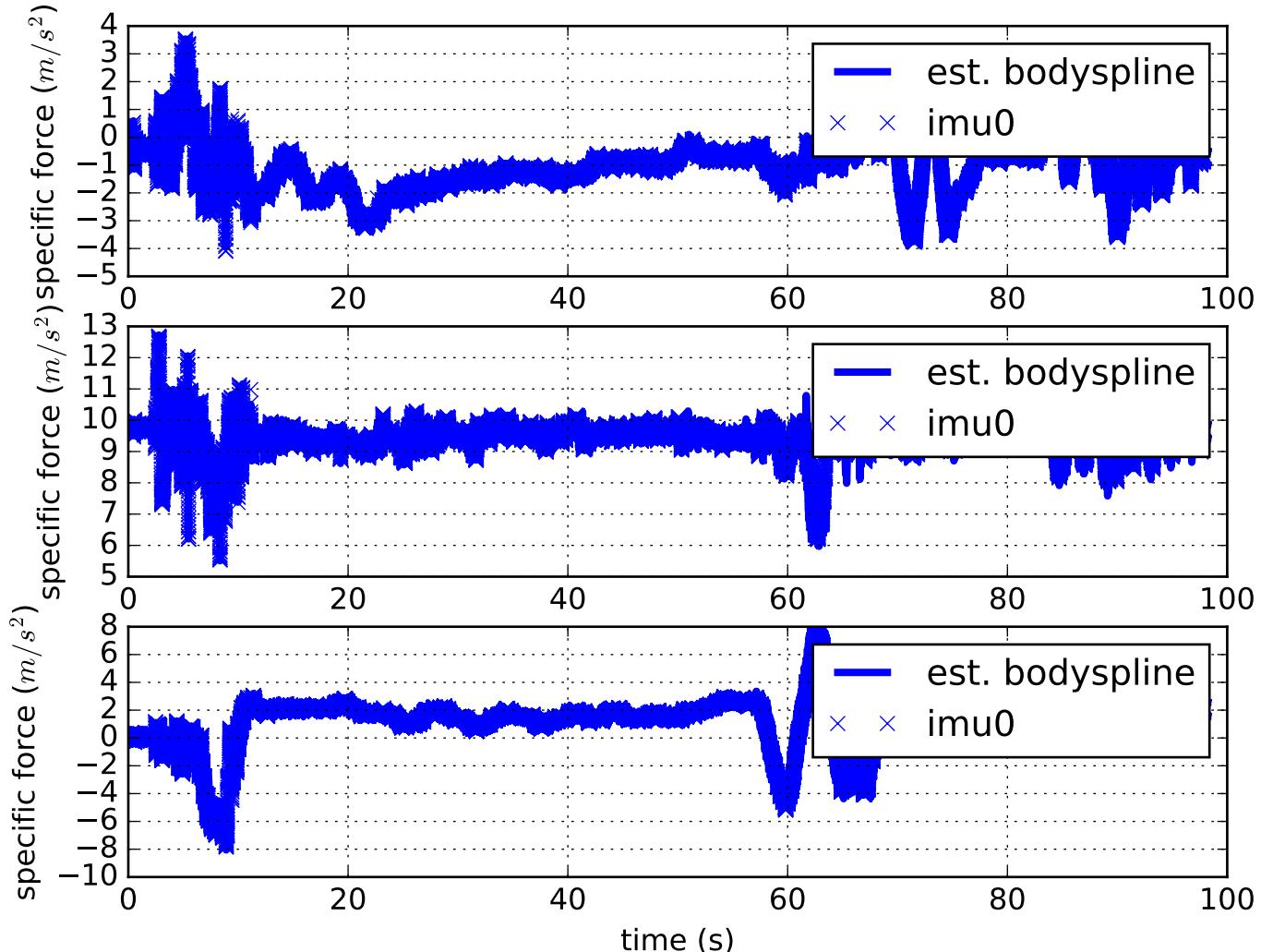
IMU0:

 Model: calibrated
 Update rate: 200.0
 Accelerometer:
 Noise density: 0.008
 Noise density (discrete): 0.11313708499
 Random walk: 0.0002
 Gyroscope:
 Noise density: 0.0002
 Noise density (discrete): 0.00282842712475
 Random walk: 4e-06

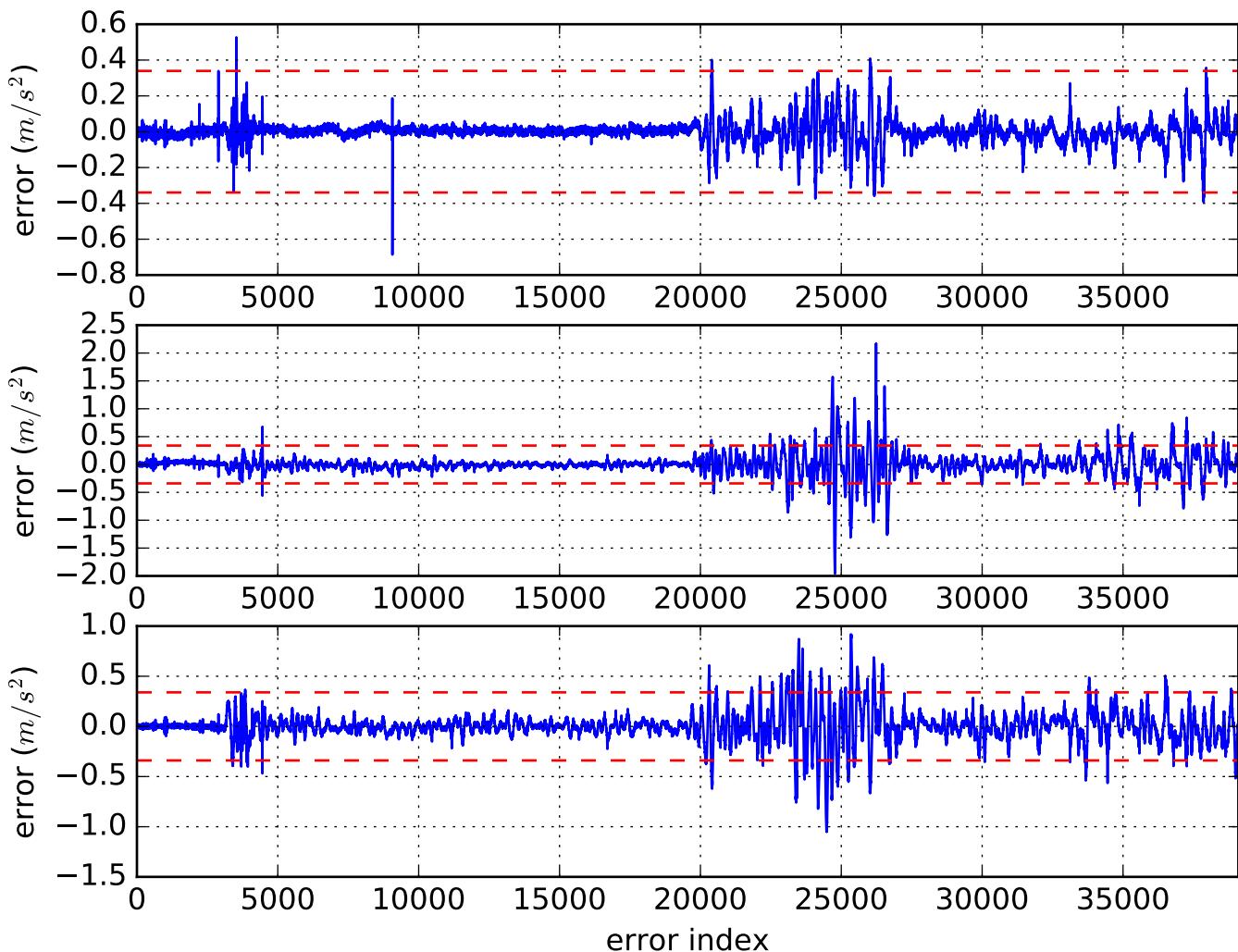
$T_{i,b}$
 [[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]
 [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

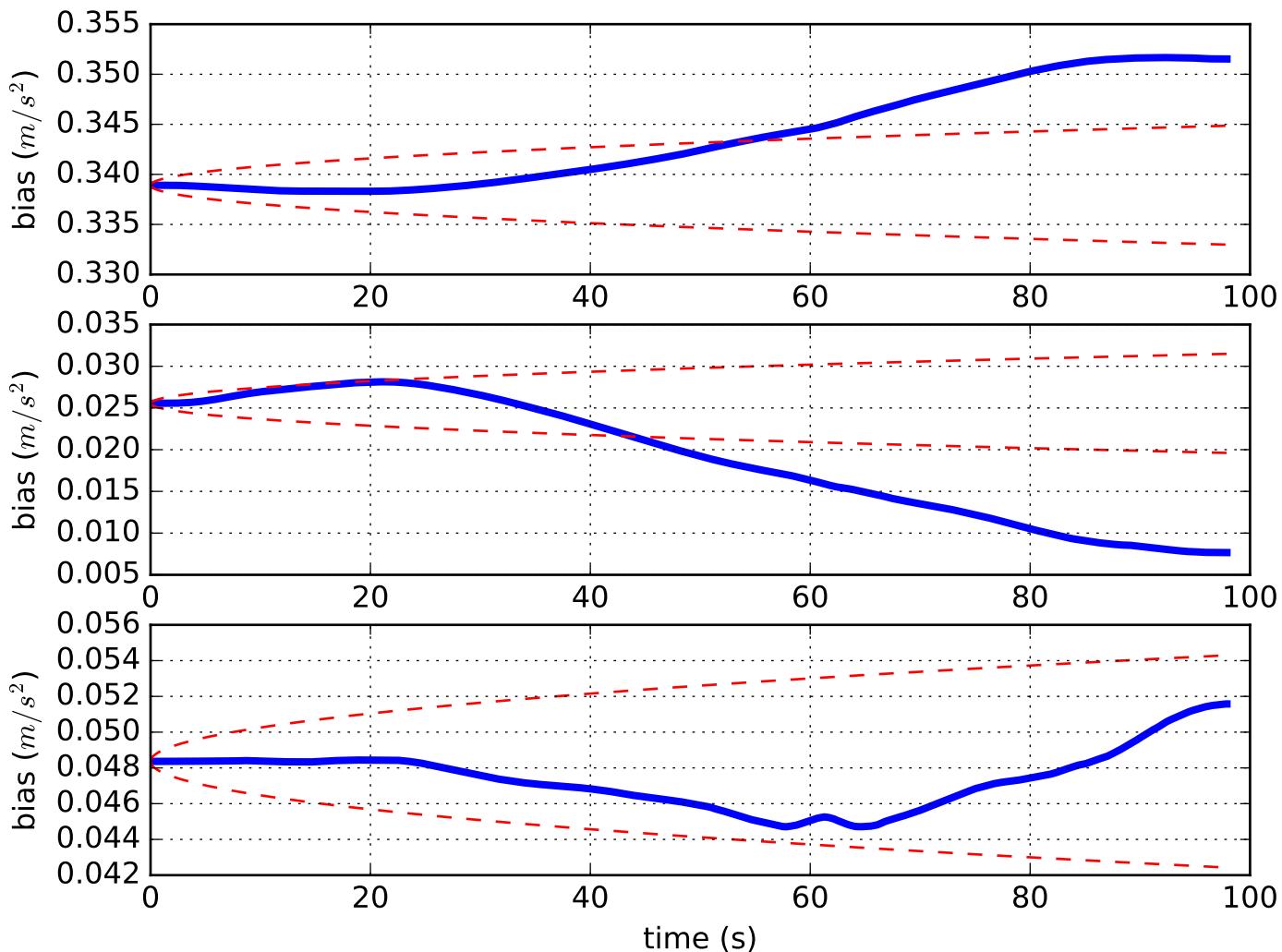
Comparison of predicted and measured specific force (imu0 frame)



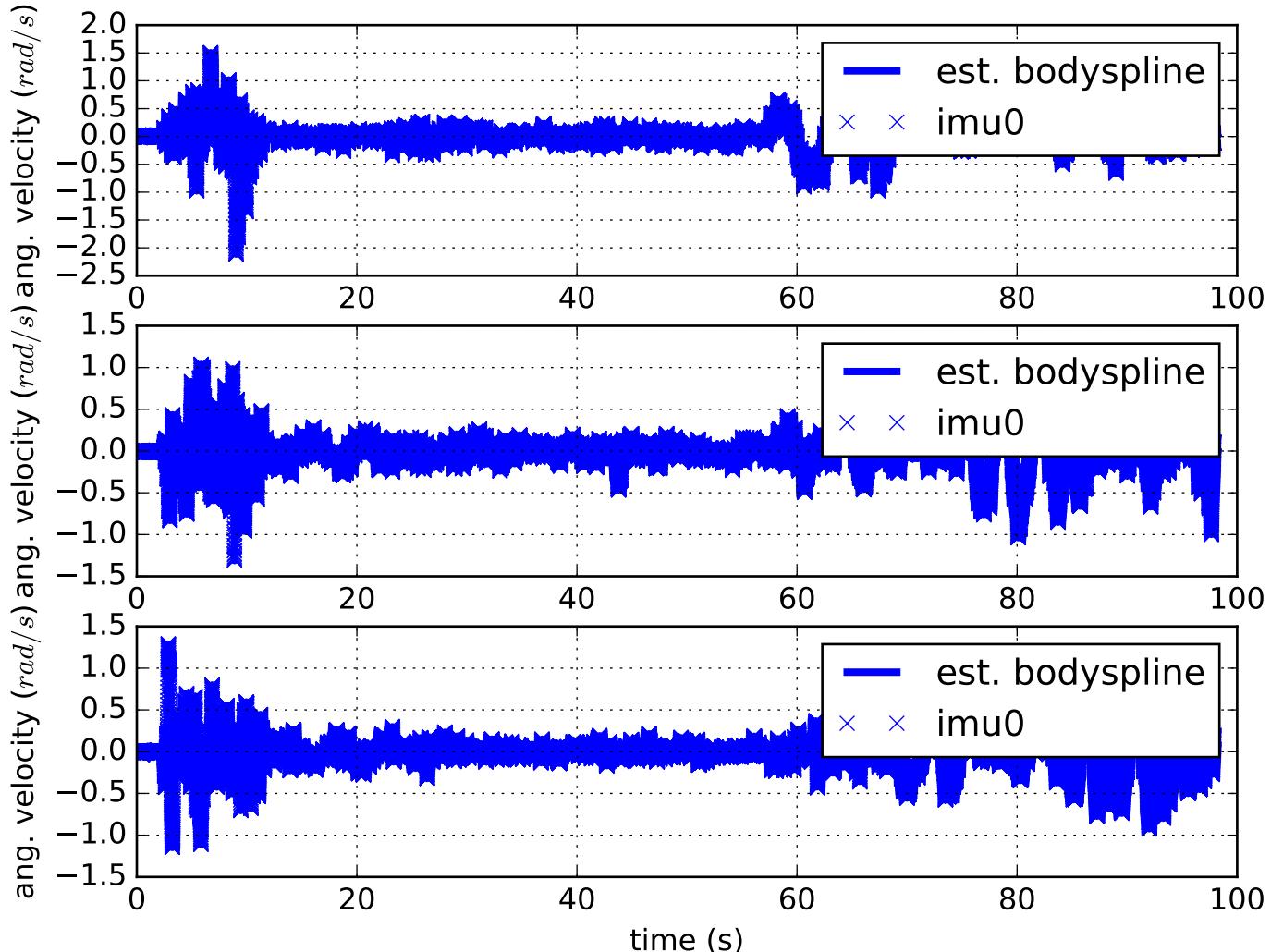
imu0: acceleration error



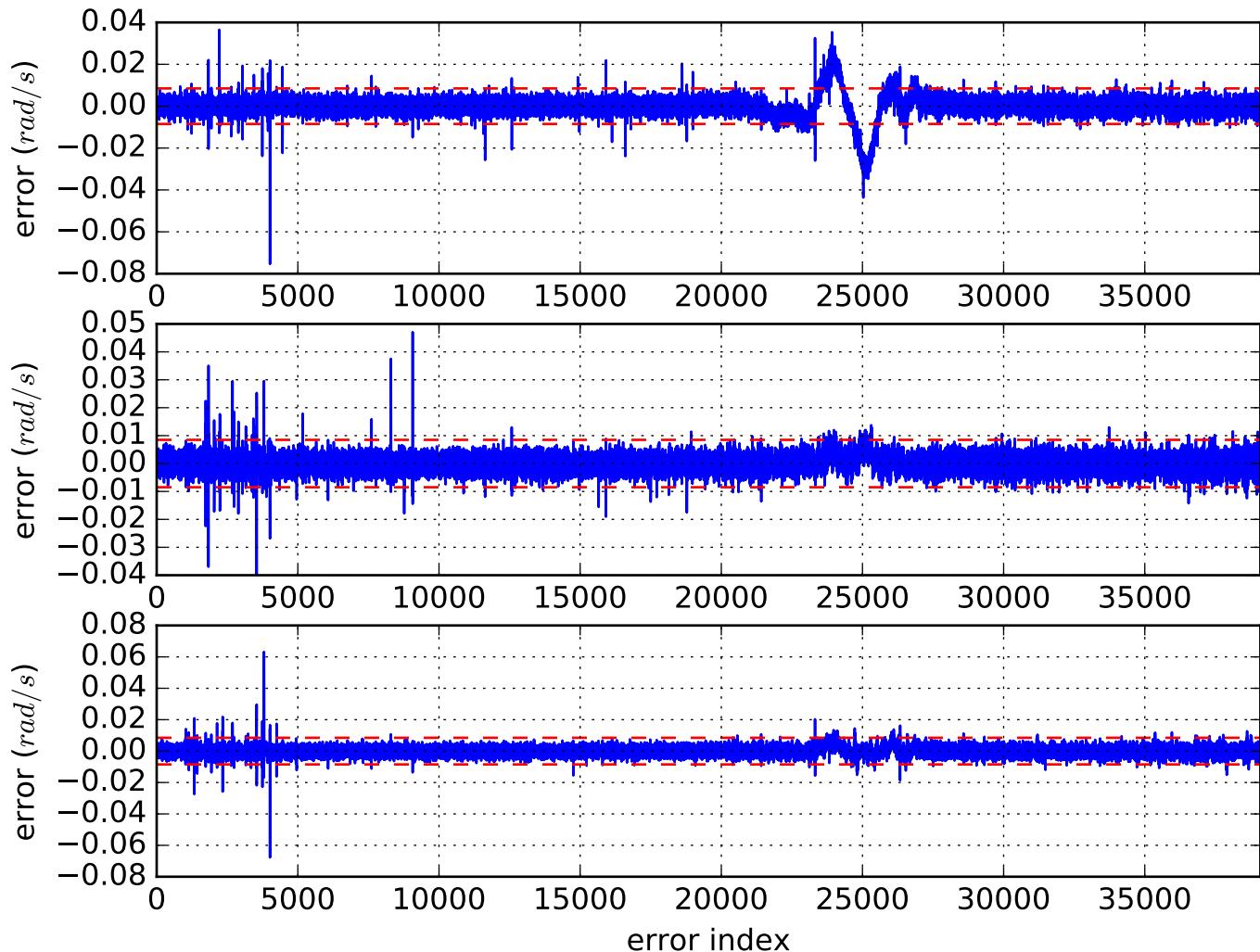
imu0: estimated accelerometer bias (imu frame)



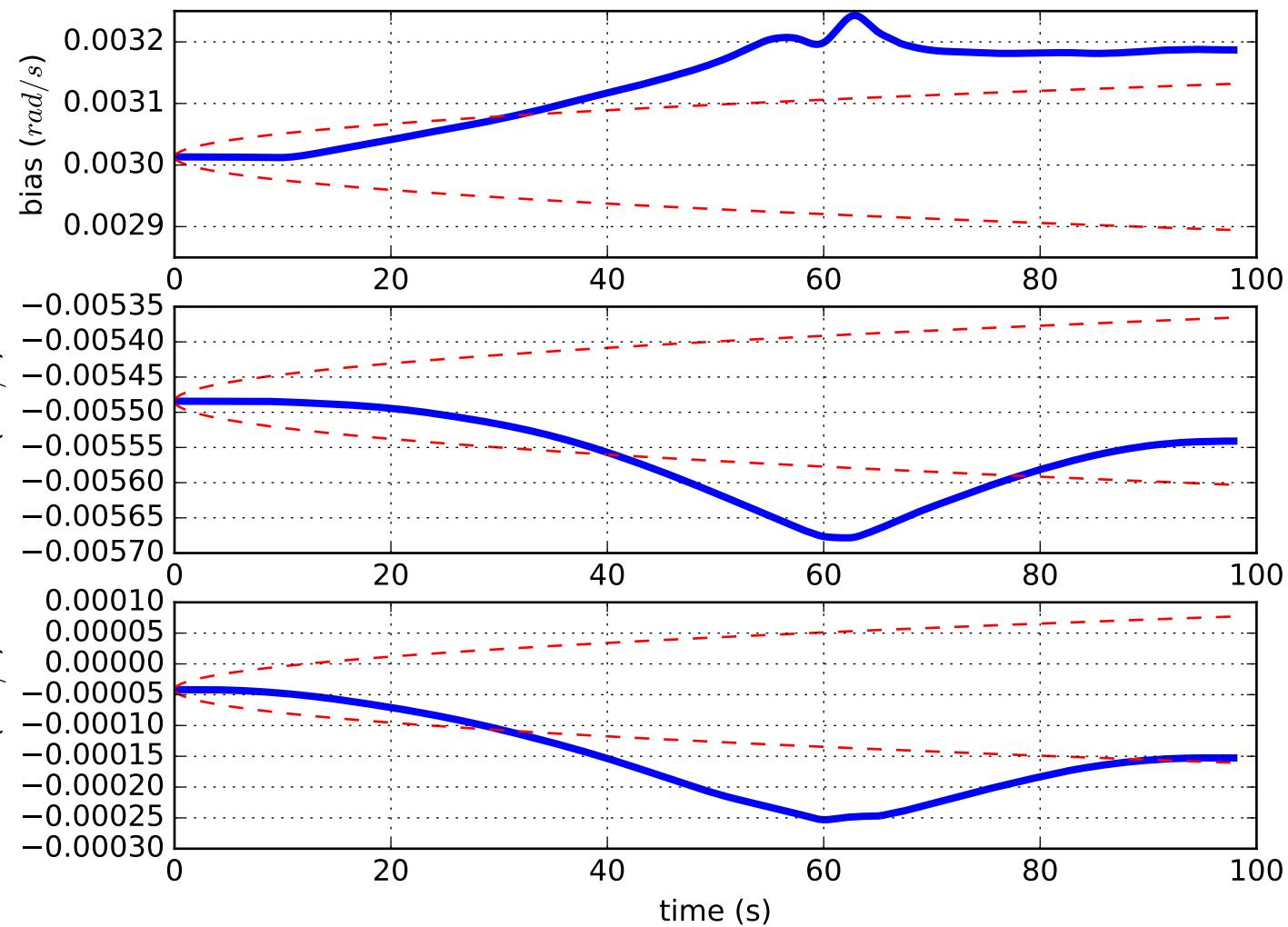
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

