

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.142527260633, median 0.119832135548, std: 0.118312022043

Gyroscope error (imu0): mean 1.58391442306, median 1.45412243436, std: 0.82521718245

Accelerometer error (imu0): mean 0.200587028803, median 0.161880572058, std: 0.178983424549

Residuals

Reprojection error (cam0) [px]: mean 0.142527260633, median 0.119832135548, std: 0.118312022043

Gyroscope error (imu0) [rad/s]: mean 0.00447998651745, median 0.00411287933604, std: 0.00233406666265

Accelerometer error (imu0) [m/s^2]: mean 0.0226938317255, median 0.0183146960391, std: 0.0202496629149

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.00434756 -0.00525156 0.99997676 0.02267561]
[0.0036335 -0.99997953 -0.00526737 -0.00111728]
[0.99998395 0.00365631 -0.00432839 -0.04451597]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.00434756 0.0036335 0.99998395 0.04442073]
[-0.00525156 -0.99997953 0.00365631 -0.00083541]
[0.99997676 -0.00526737 -0.00432839 -0.02287365]
[0. 0. 0. 1.]]

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

0.0039464102099579425

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

[0.01035863 -9.58908765 -2.0537073]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [301.0362881371328, 301.74593277116776]
Principal point: [357.11118688370635, 284.6365744012512]
Distortion model: equidistant
Distortion coefficients: [0.02190185970514509, 0.014125839861669735, -0.004452450671361683, 0.002361684127816967]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.055 [m]
 Spacing 0.0165 [m]

IMU configuration

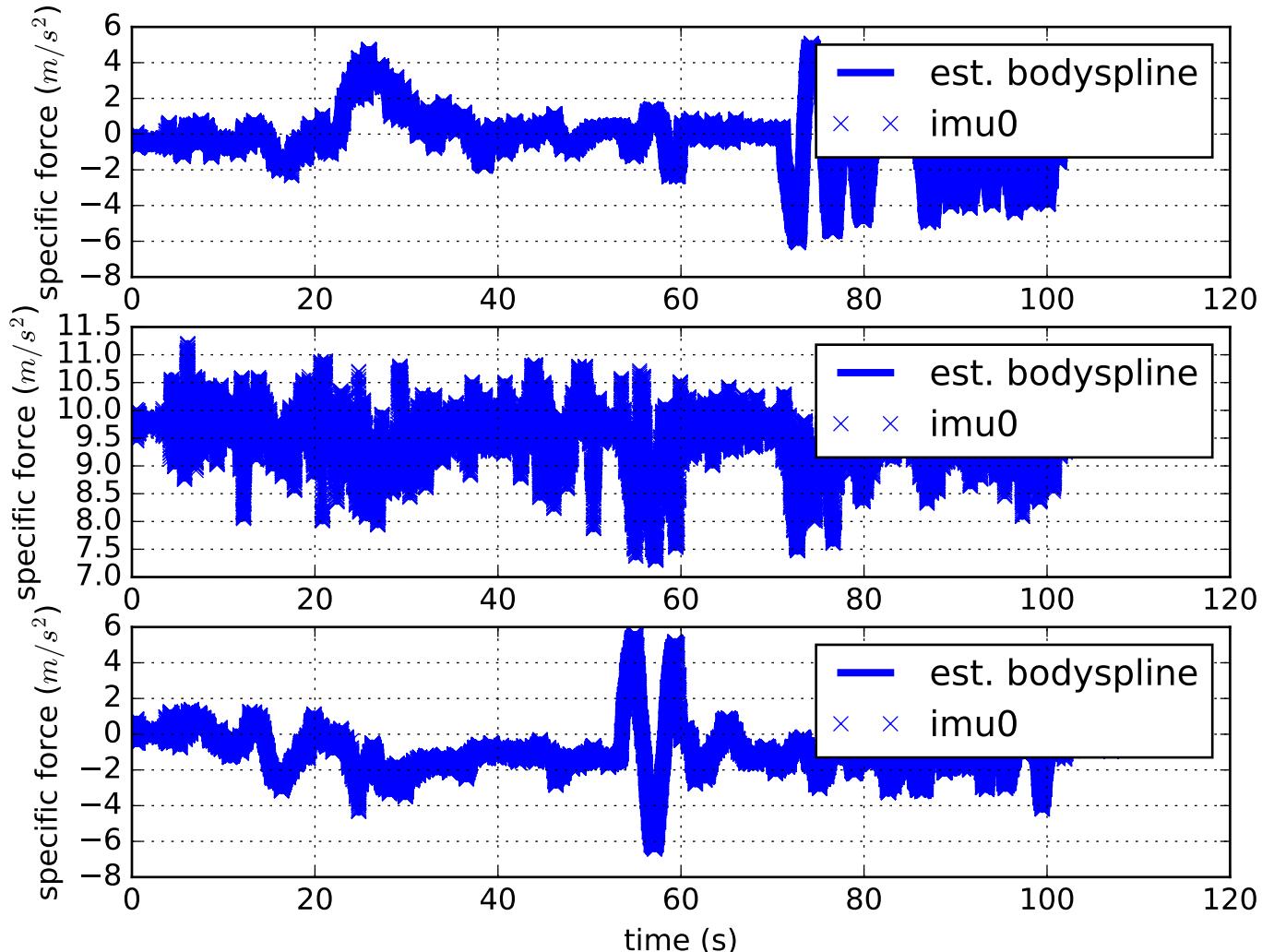
IMU0:

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

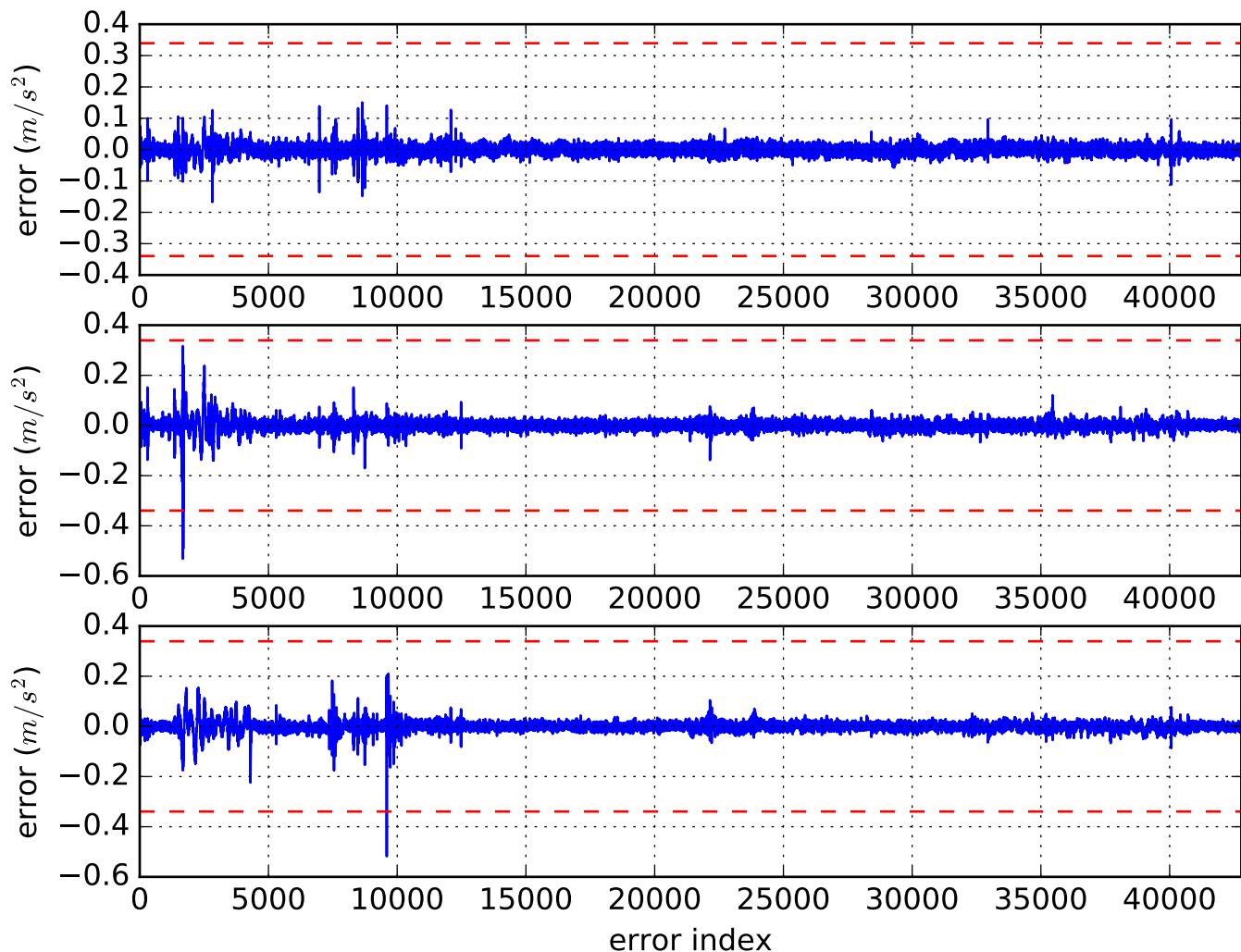
$T_{i,b}$
[[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]
 [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

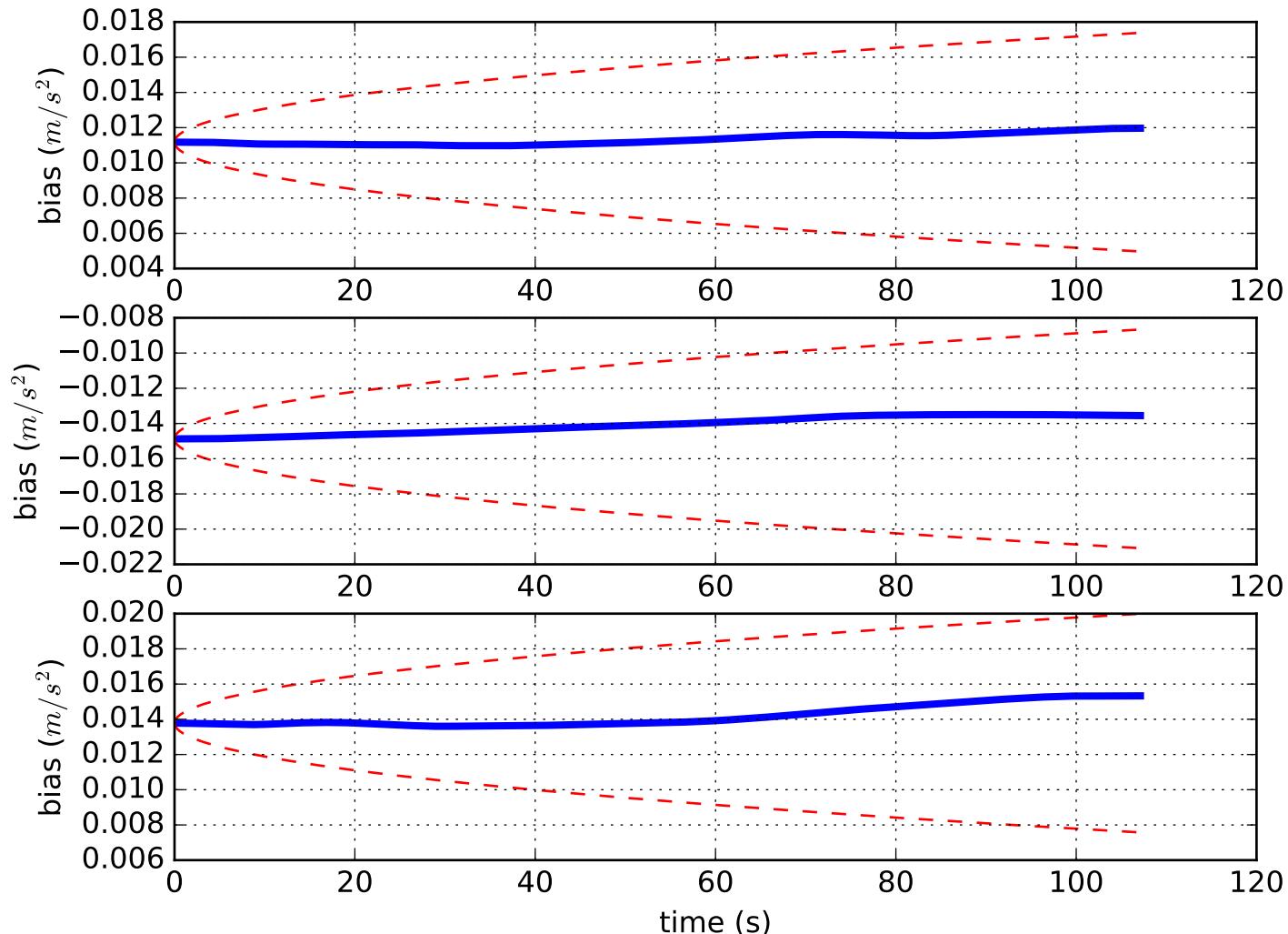
Comparison of predicted and measured specific force (imu0 frame)



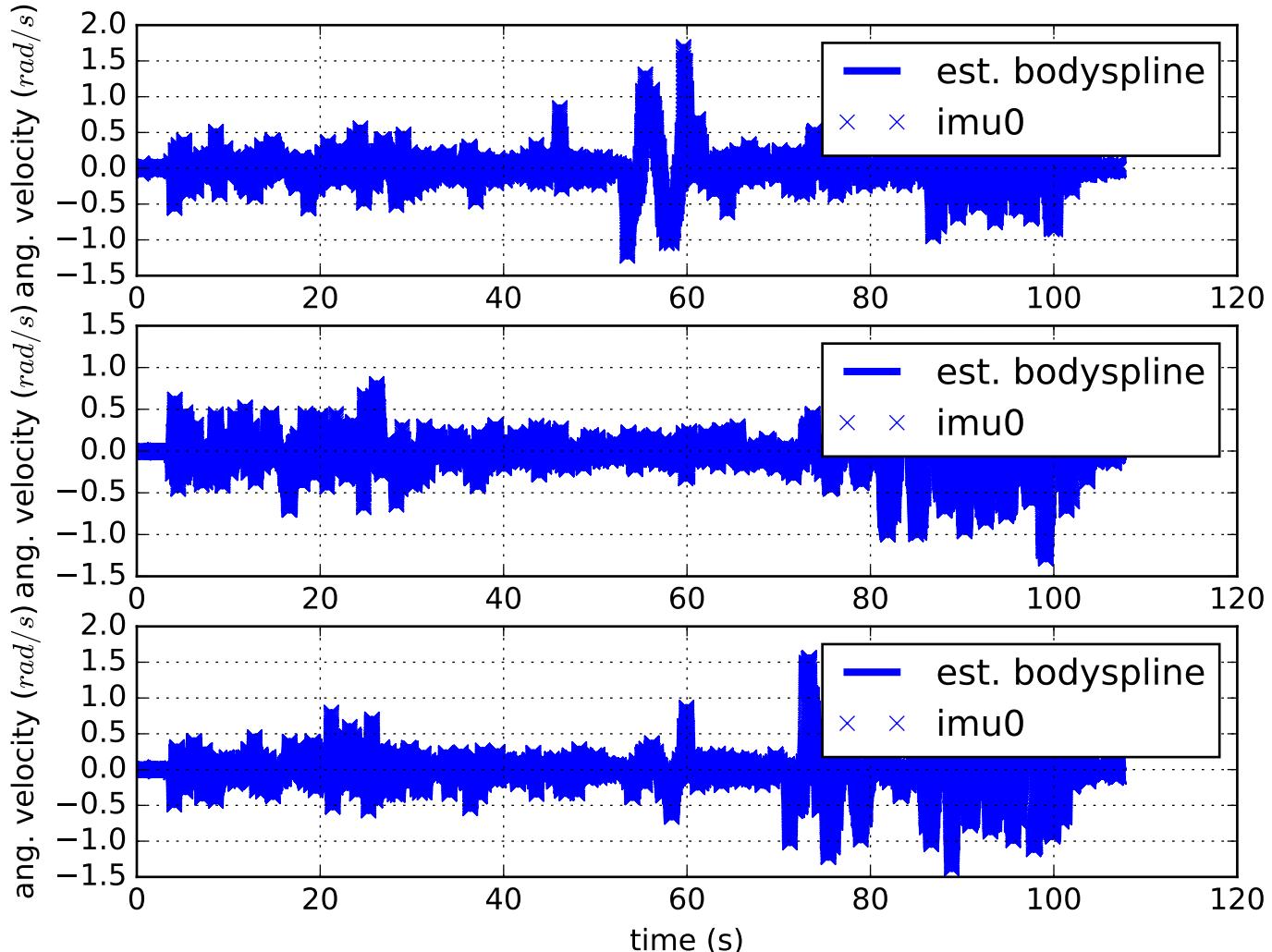
imu0: acceleration error



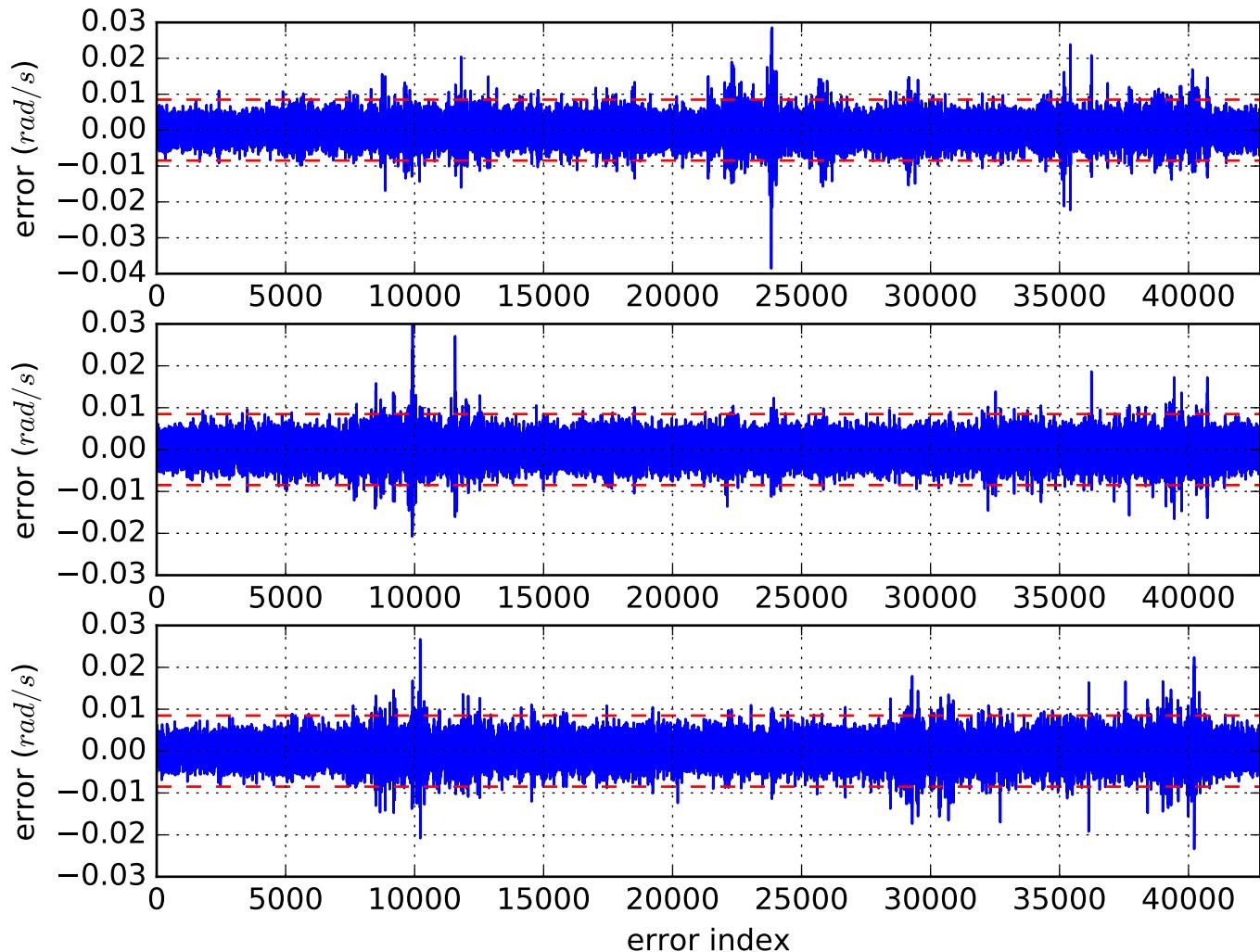
imu0: estimated accelerometer bias (imu frame)



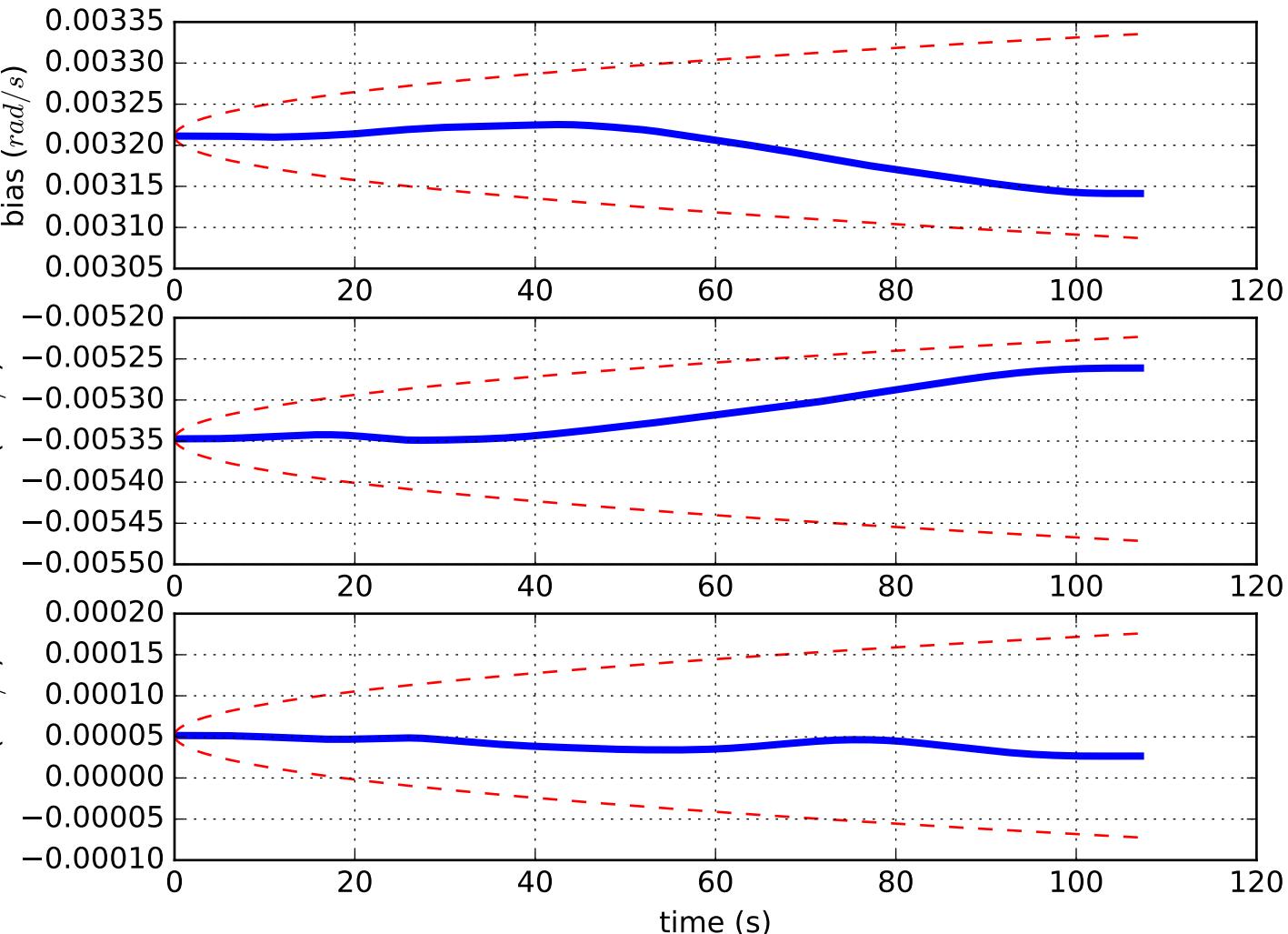
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

