

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 3.05918359636, median 2.82113023032, std: 1.67002513391

Gyroscope error (imu0): mean 0.00745614718429, median 1.59298573059e-07, std: 0.0563075157854

Accelerometer error (imu0): mean 8.99055187386e-05, median 6.48262776863e-05, std: 0.000173998670602

Residuals

Reprojection error (cam0) [px]: mean 3.05918359636, median 2.82113023032, std: 1.67002513391

Gyroscope error (imu0) [rad/s]: mean 0.000152851017278, median 3.26562074772e-09, std: 0.0011543040736

Accelerometer error (imu0) [m/s^2]: mean 2.87697659964e-07, median 2.07444088596e-07, std: 5.56795745926e-07

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.03231081 -0.98624916 0.16207591 -0.00016046]

[-0.55482023 -0.15258008 -0.8178593 -0.00023079]

[0.8313426 -0.06349729 -0.55212098 -0.00080632]

[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.03231081 -0.55482023 0.8313426 0.00054747]

[-0.98624916 -0.15258008 -0.06349729 -0.00024467]

[0.16207591 -0.8178593 -0.55212098 -0.00060794]

[0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] ($t_{imu} = t_{cam} + \text{shift}$)

0.0

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

[-1.09843455 -9.74177675 -0.24423387]

Calibration configuration

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cam0

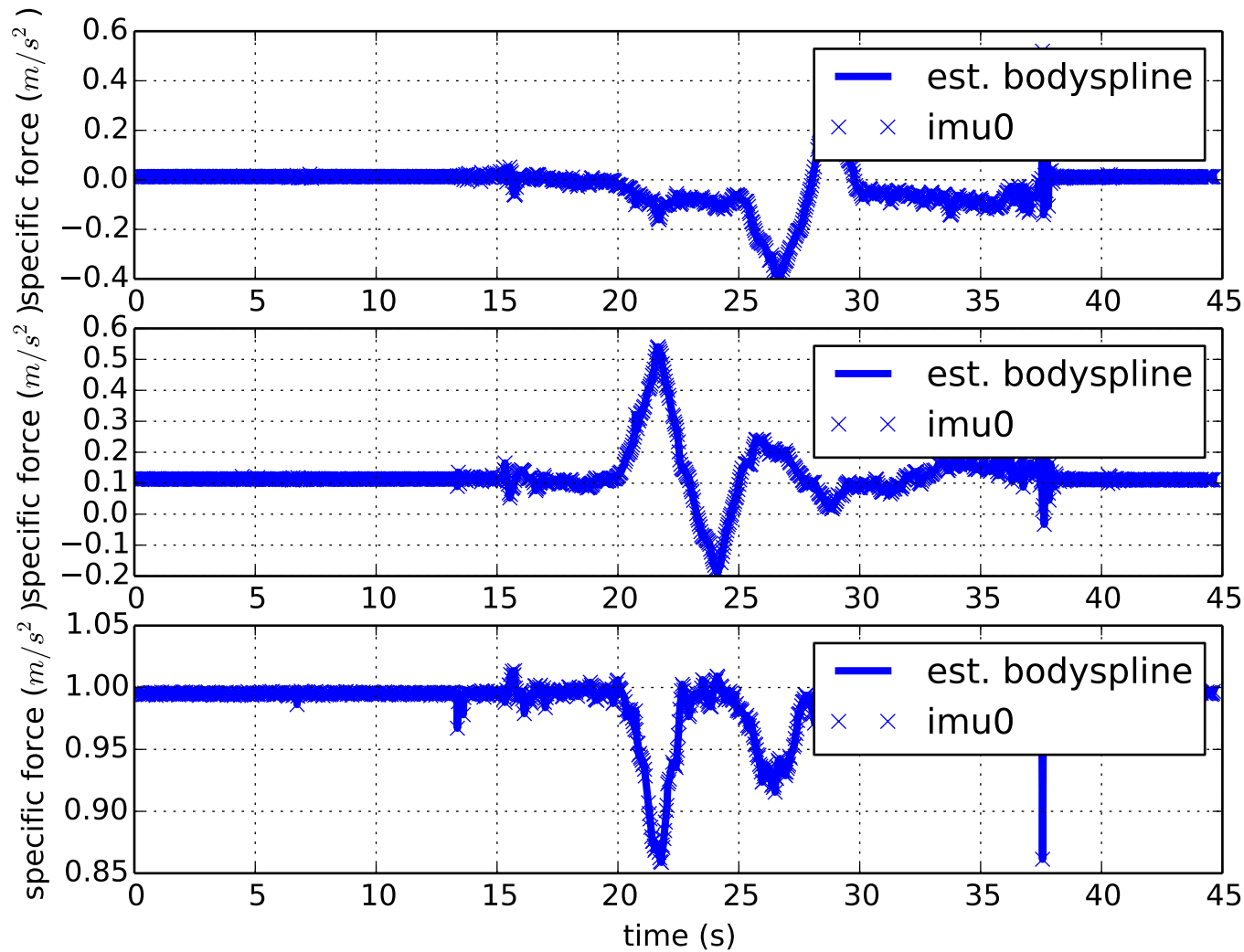
Camera model: omni
Focal length: [207.06448, 206.66068]
Principal point: [324.838, 208.3764]
Omni xi: 1
Distortion model: radtan
Distortion coefficients: [1.2828, 0.0108, -0.02, 0.0167]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.03 [m]
 Spacing 0.00999 [m]

IMU configuration
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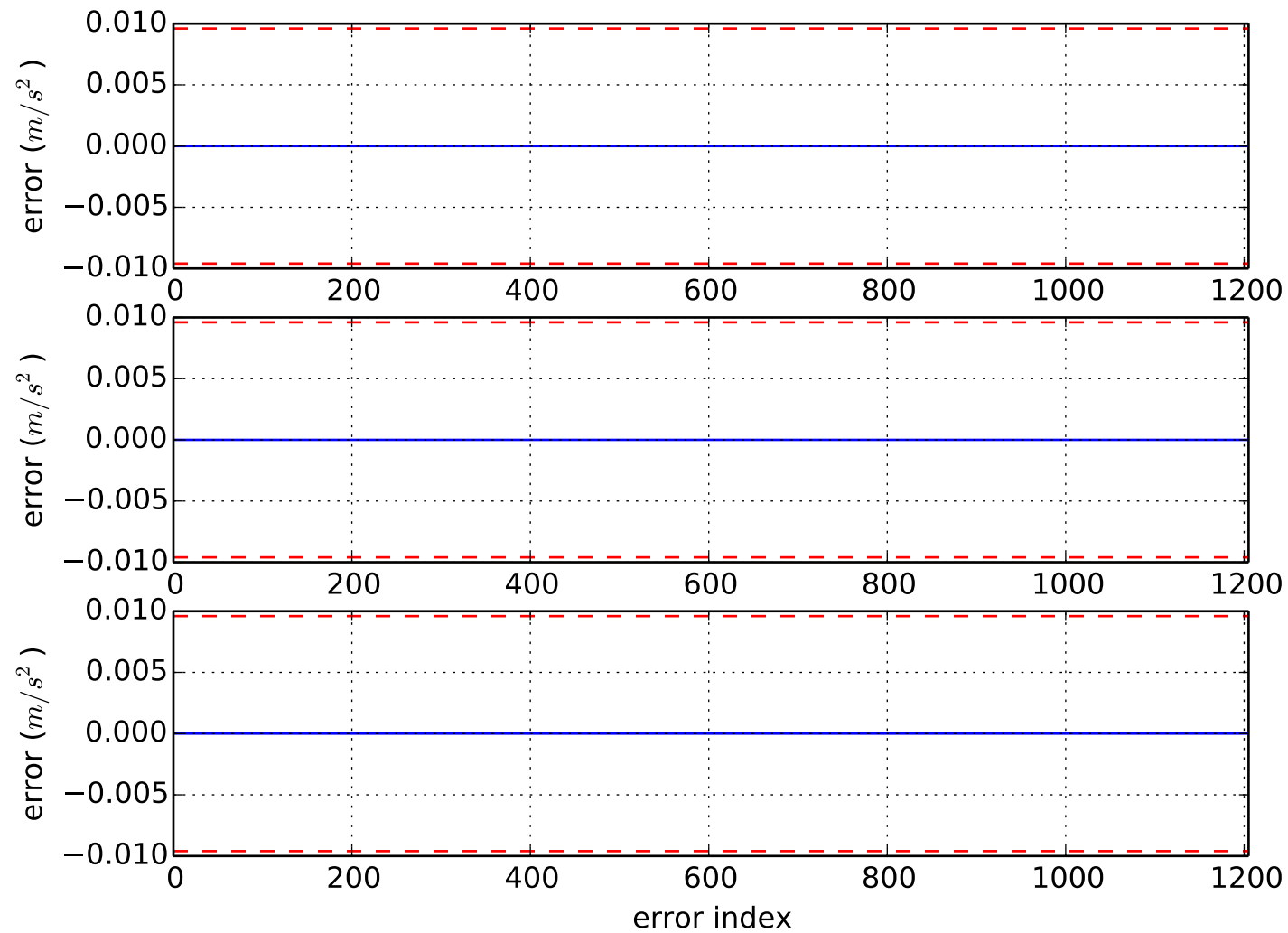
IMU0:

Model: calibrated
Update rate: 25
Accelerometer:
 Noise density: 0.00064
 Noise density (discrete): 0.0032
 Random walk: 8.86e-07
Gyroscope:
 Noise density: 0.0041
 Noise density (discrete): 0.0205
 Random walk: 5.7e-07
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]

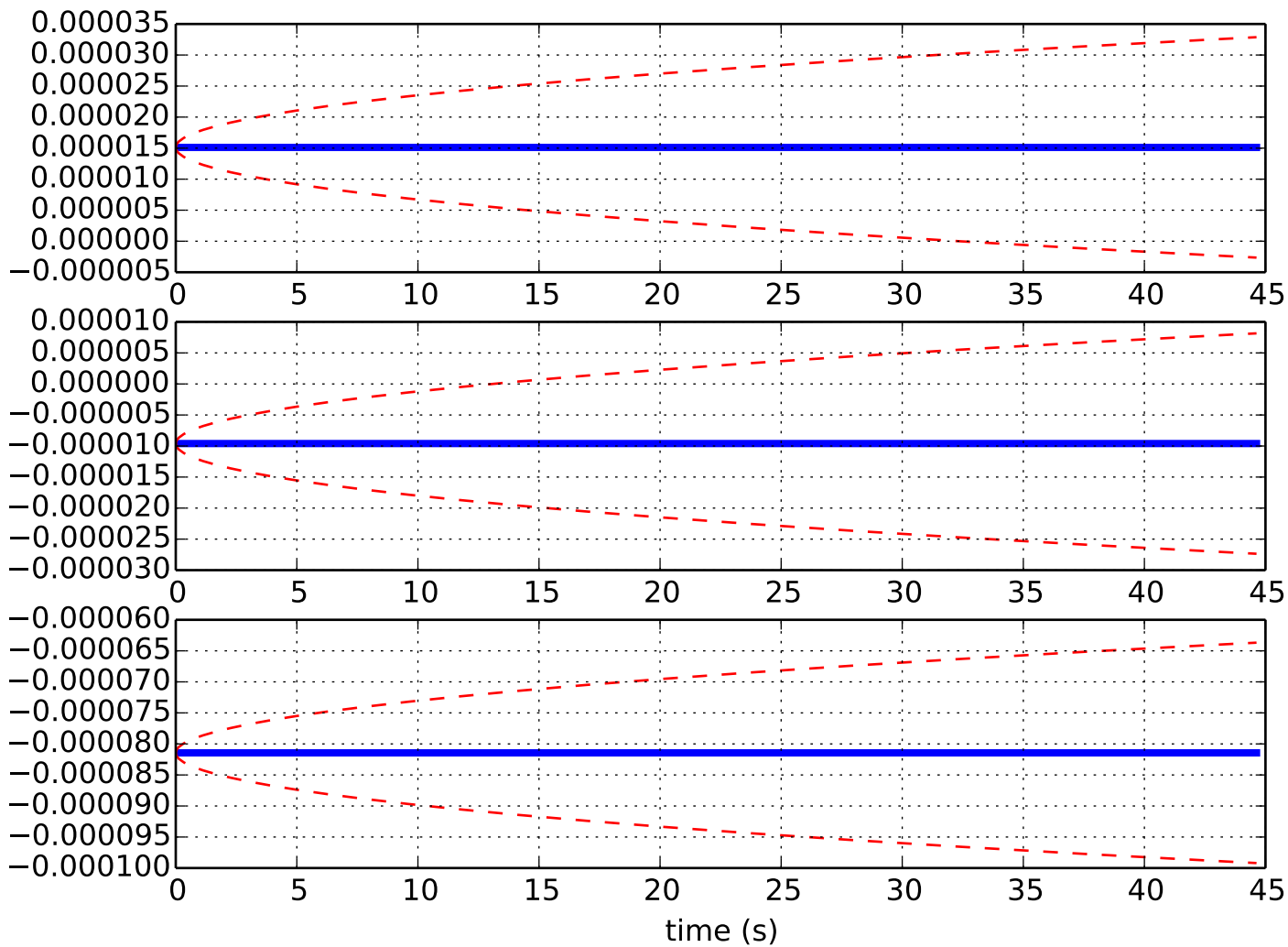
Comparison of predicted and measured specific force (imu0 frame)



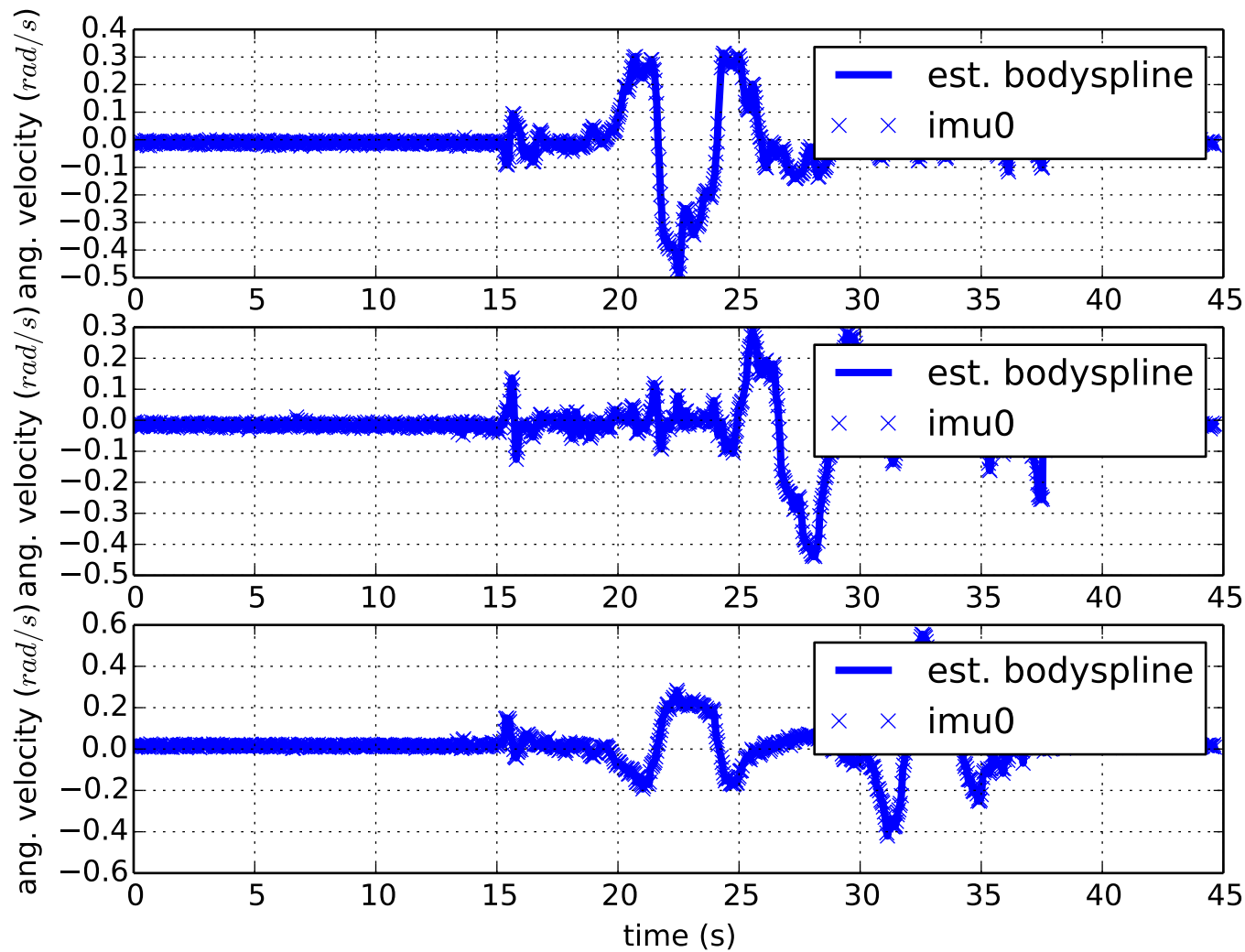
imu0: acceleration error



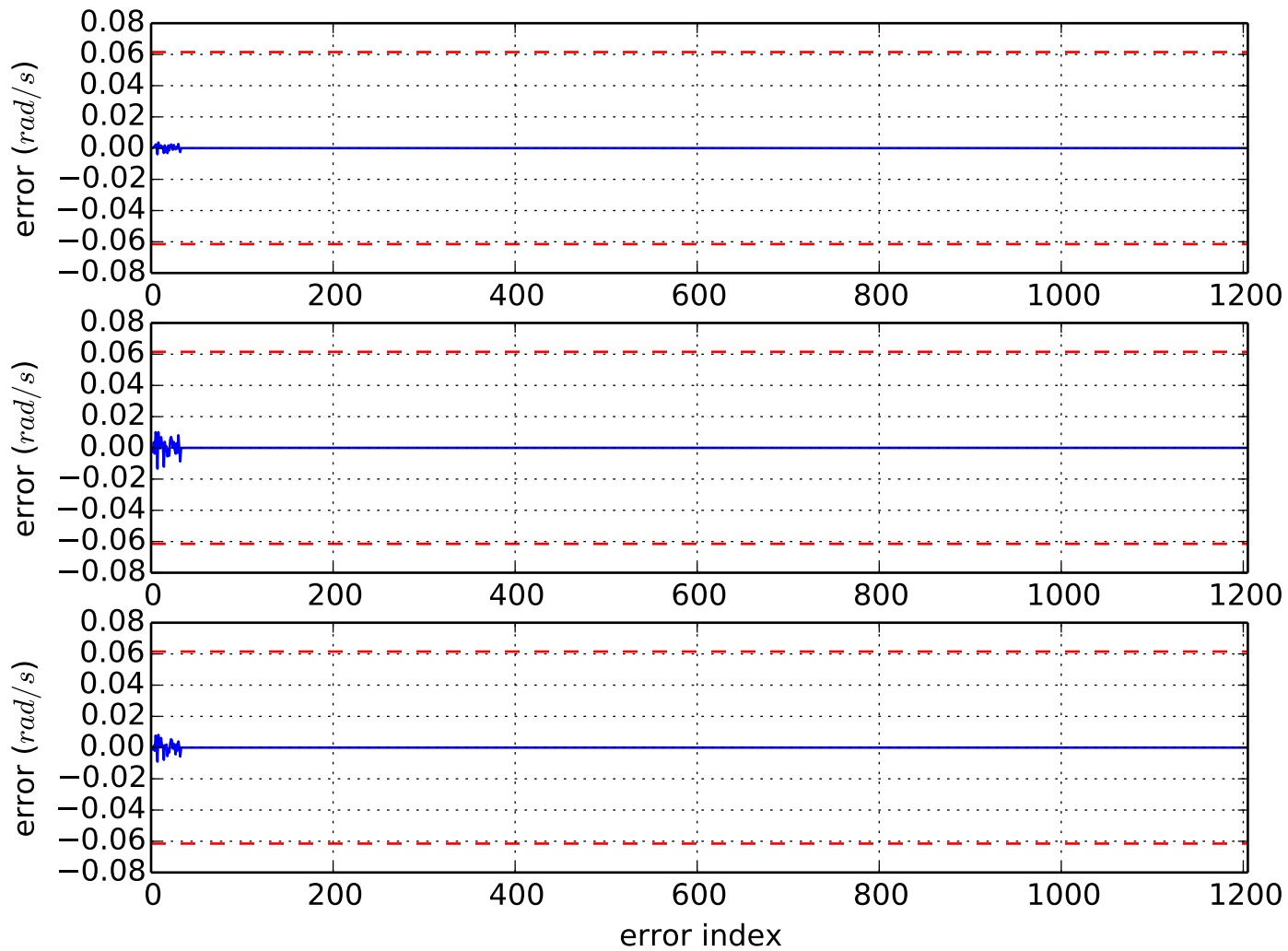
imu0: estimated accelerometer bias (imu frame)



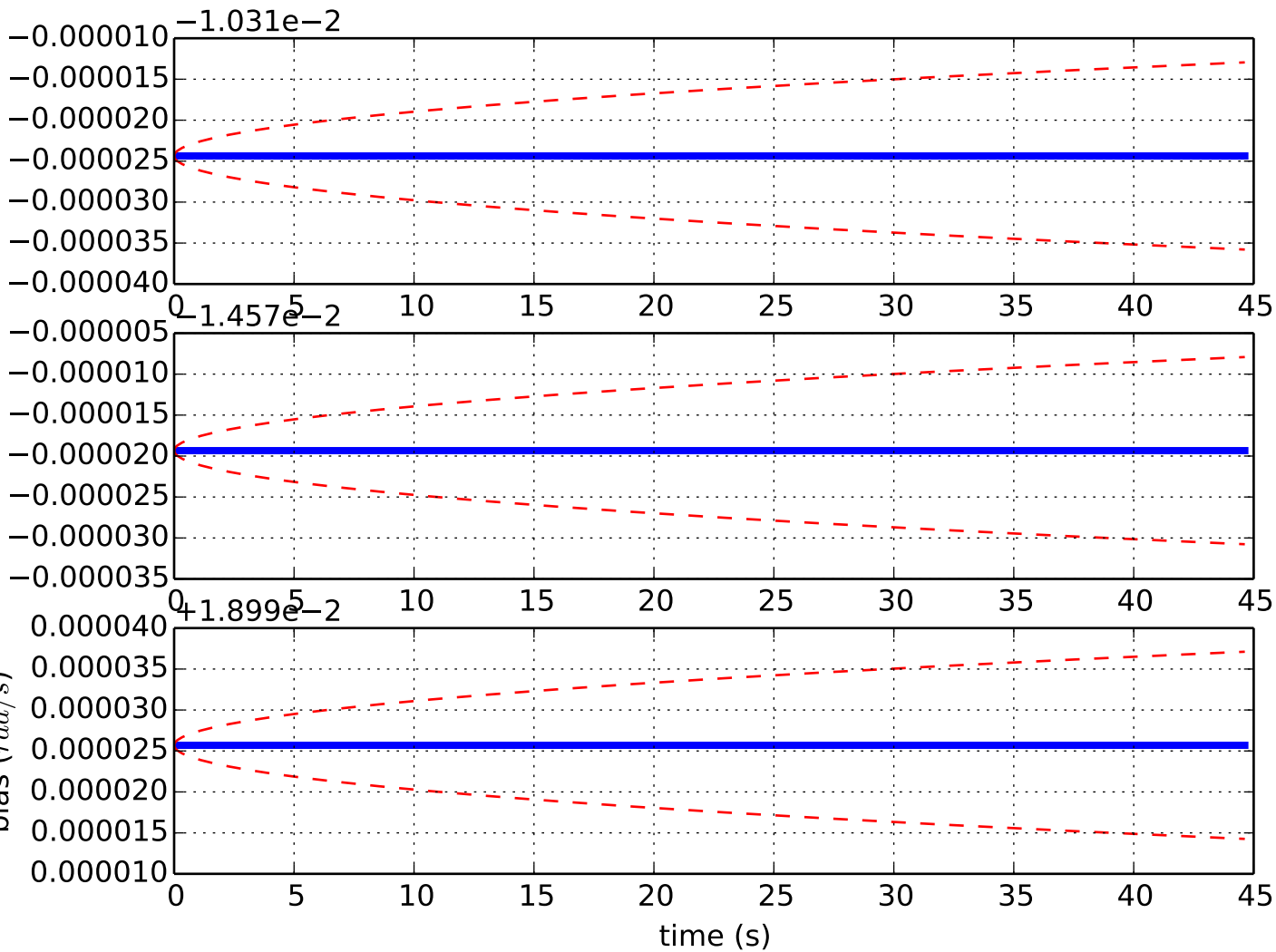
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

