

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 5.82786333048, median 6.01408862781, std: 1.64161337807

Gyroscope error (imu0): mean 1.2367904469, median 0.0347928670176, std: 4.02198222002

Accelerometer error (imu0): mean 0.642619653812, median 0.00597483152013, std: 2.65693159772

Residuals

Reprojection error (cam0) [px]: mean 5.82786333048, median 6.01408862781, std: 1.64161337807

Gyroscope error (imu0) [rad/s]: mean 0.0311230113841, median 0.000875539424633, std: 0.101210515277

Accelerometer error (imu0) [m/s^2]: mean 0.126811366197, median 0.00117904353433, std: 0.524305666344

Transformation (cam0):

T_ci: (imu0 to cam0):

[[-0.33408501 0.90897385 0.24930653 0.025995]
[0.08462253 -0.23450972 0.96842357 0.03458257]
[0.93873651 0.34463275 0.00142651 0.23505127]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[-0.33408501 0.08462253 0.93873651 -0.21489313]
[0.90897385 -0.23450972 0.34463275 -0.0965252]
[0.24930653 0.96842357 0.00142651 -0.04030661]
[0. 0. 0. 1.]]

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

-0.109633040689

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

[-1.10202995 9.71455991 0.76241635]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [535.1677324604851, 527.8412168979511]
Principal point: [426.2612583571855, 217.1351538711907]
Distortion model: equidistant
Distortion coefficients: [0.004746534251003806, -0.011556249648184684, -0.01437692133768232, -0.0008950781903423704]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.034 [m]
 Spacing 0.00102 [m]

IMU configuration

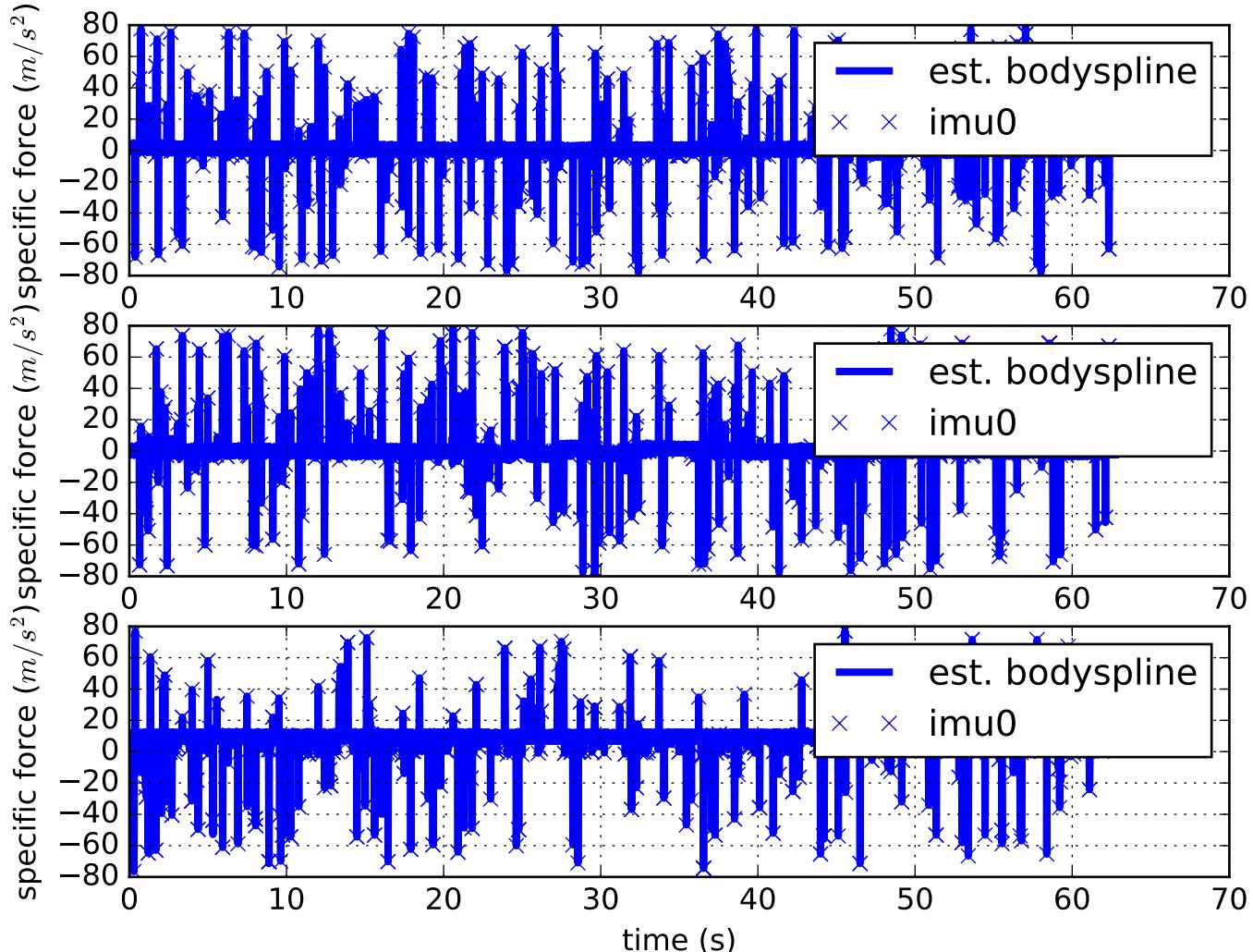
IMU0:

 Model: calibrated
 Update rate: 100.0
 Accelerometer:
 Noise density: 0.0197335026161
 Noise density (discrete): 0.197335026161
 Random walk: 0.00130379197326
 Gyroscope:
 Noise density: 0.0025164336822
 Noise density (discrete): 0.025164336822
 Random walk: 8.83855712176e-05

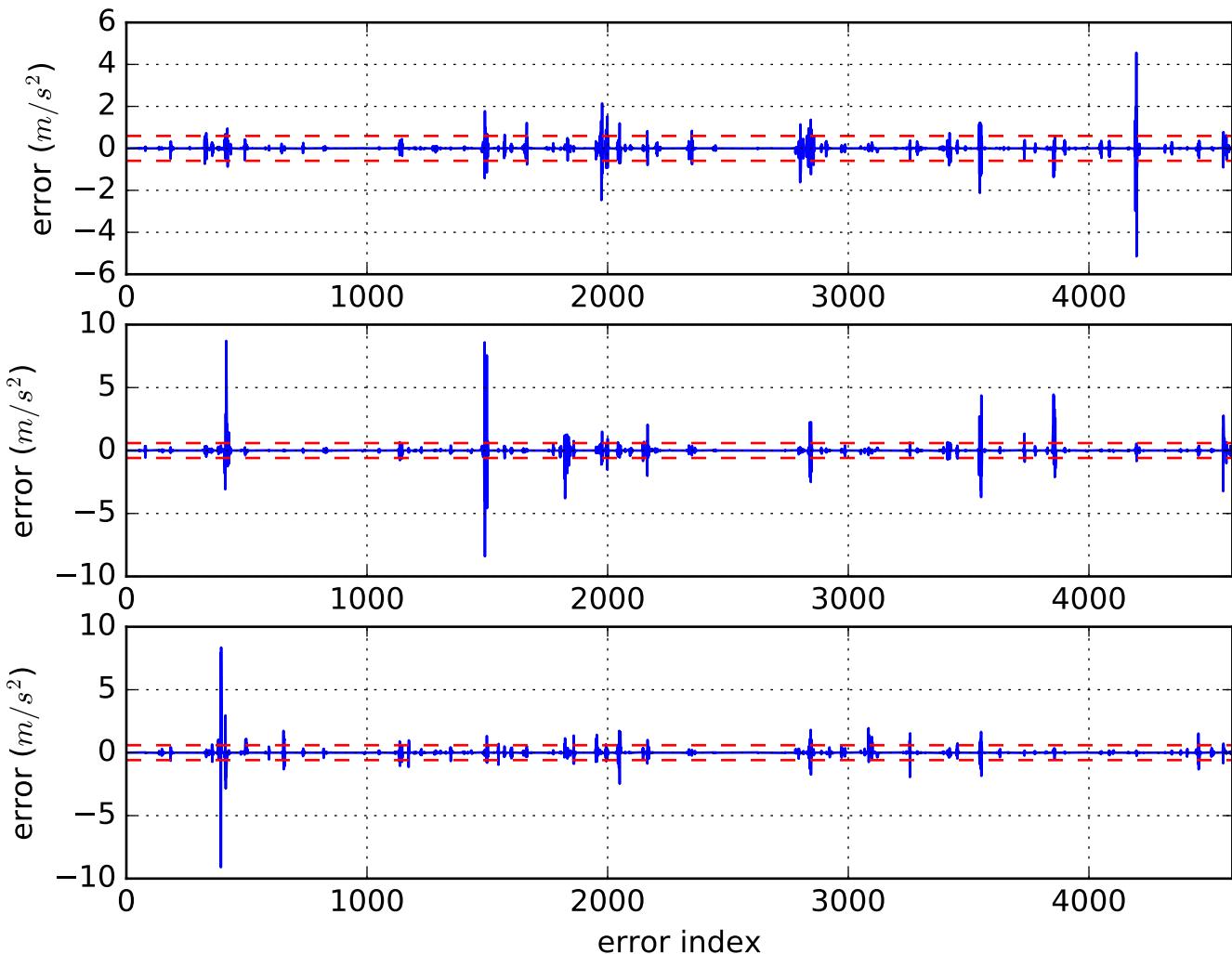
 T_i_b
 [[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]
 [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

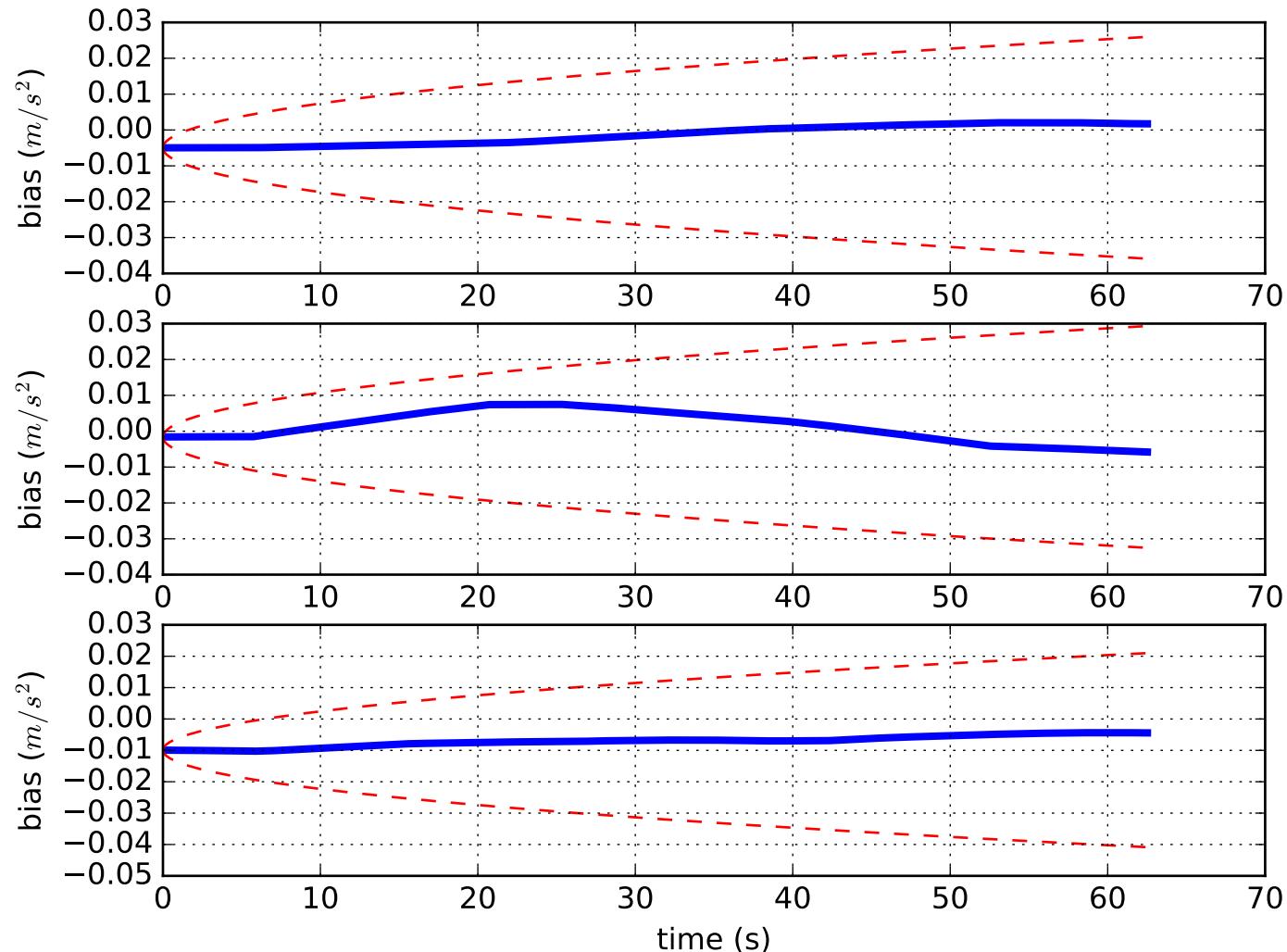
Comparison of predicted and measured specific force (imu0 frame)



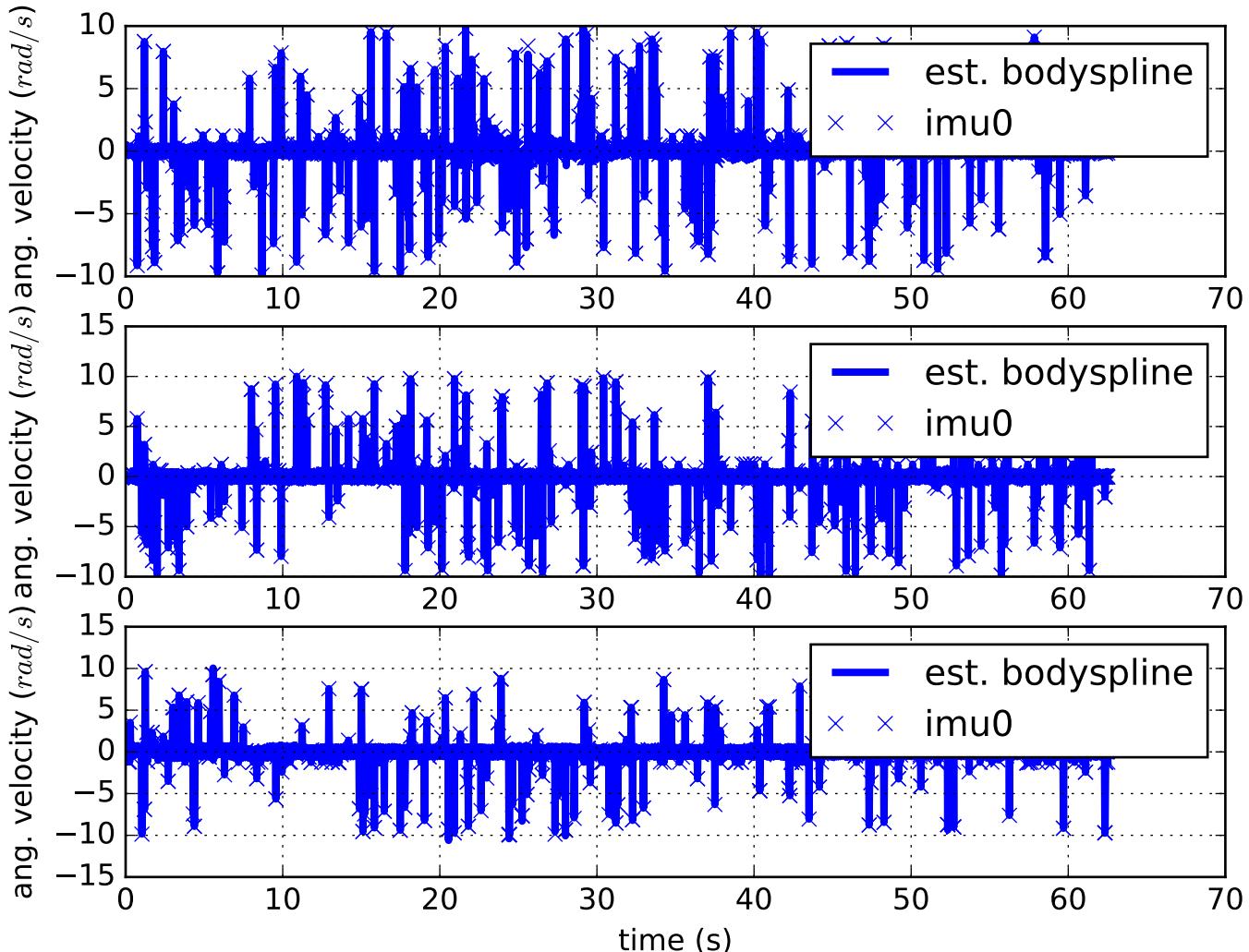
imu0: acceleration error



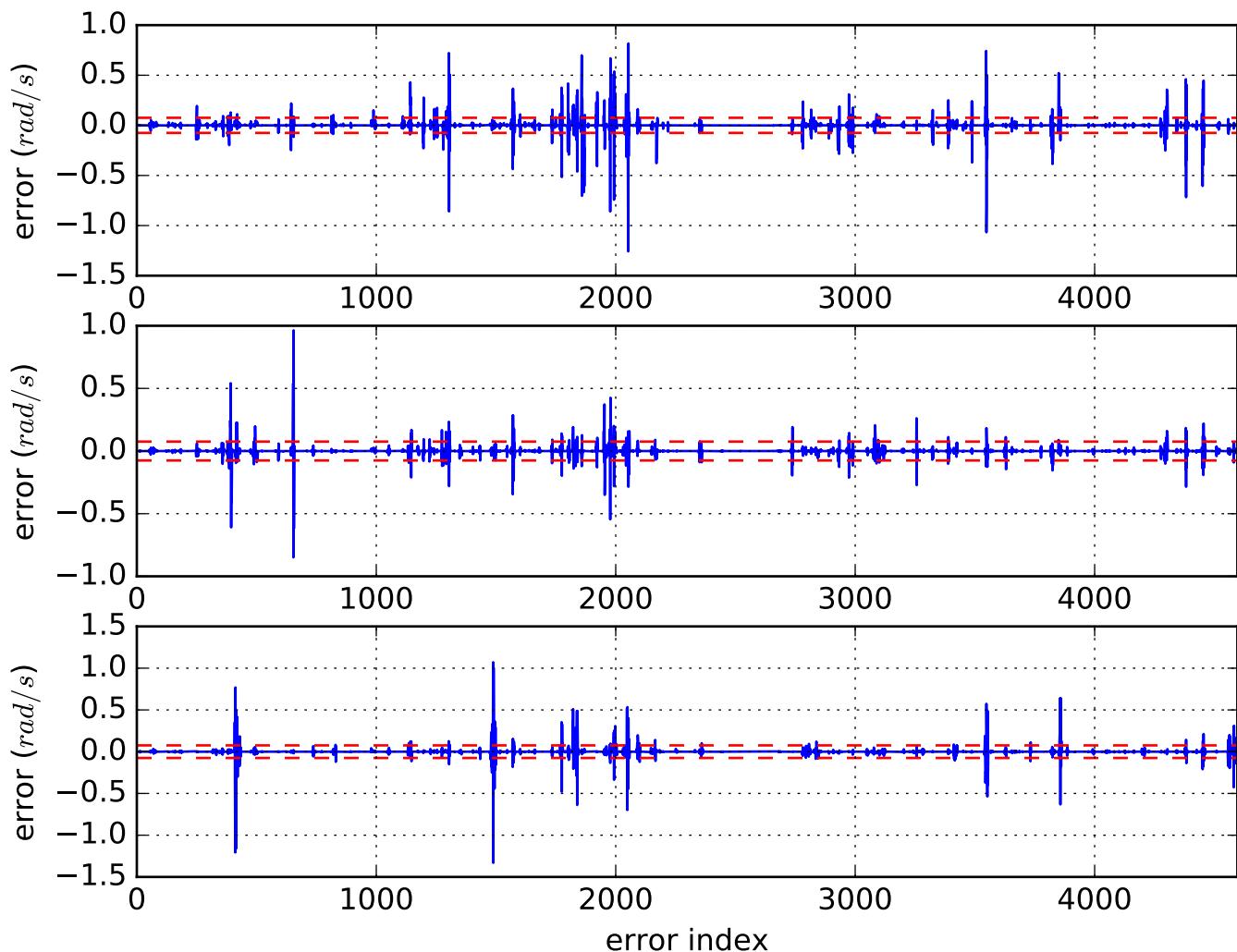
imu0: estimated accelerometer bias (imu frame)



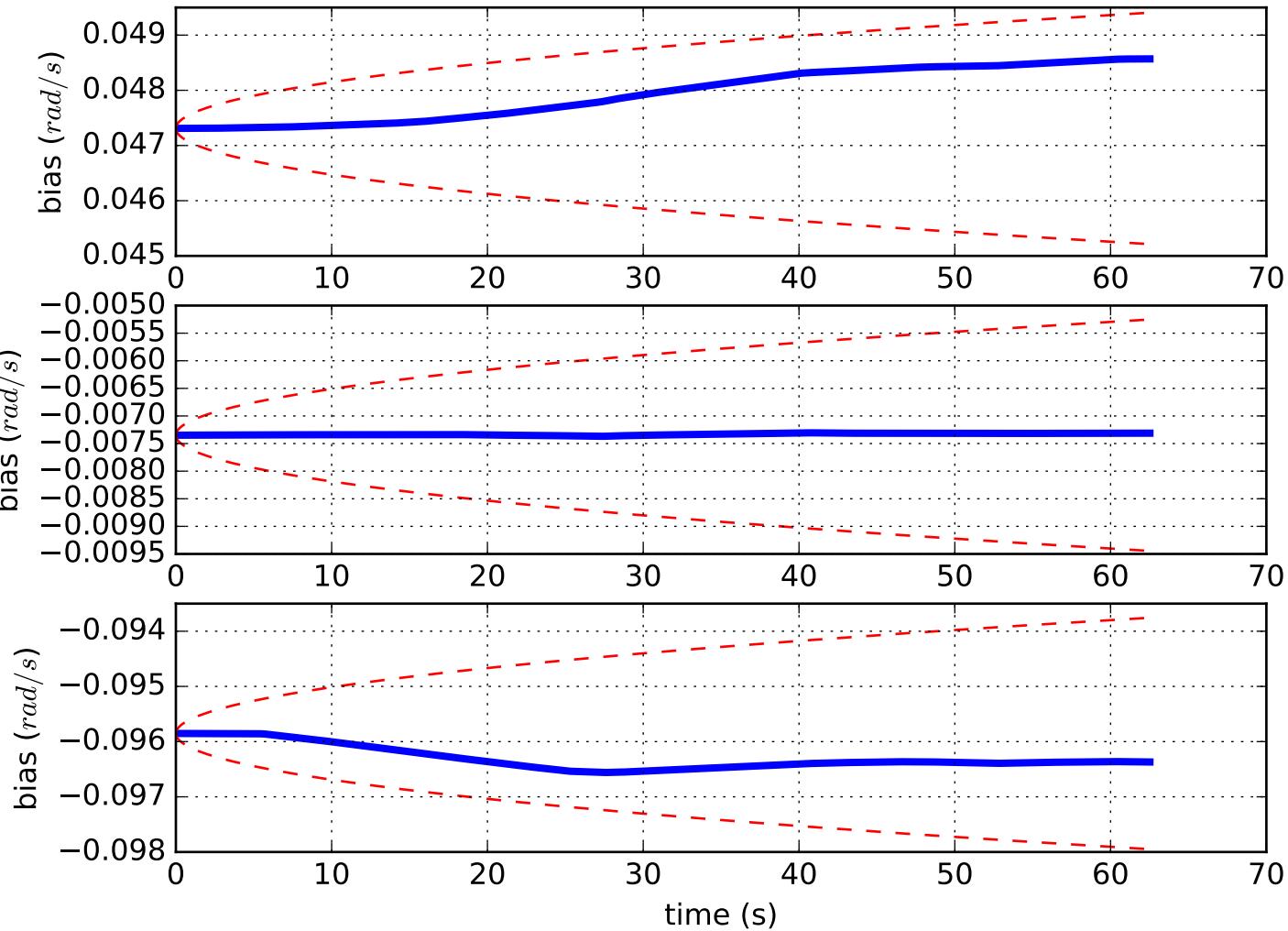
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

