

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.643265004999, median 0.562385221663, std: 0.444752745565

Gyroscope error (imu0): mean 4.19195532524, median 3.22572036503, std: 3.77606332644

Accelerometer error (imu0): mean 10.3588819505, median 12.4062321693, std: 6.54578735612

Residuals

Reprojection error (cam0) [px]: mean 0.643265004999, median 0.562385221663, std: 0.444752745565

Gyroscope error (imu0) [rad/s]: mean 7.87529577868, median 6.06006028284, std: 7.09397244663

Accelerometer error (imu0) [m/s^2]: mean 4.46945791401, median 5.35281054628, std: 2.82425470645

Transformation (cam0):

T_ci: (imu0 to cam0):

[[-0.9991344 0.03779733 -0.01737255 0.00722238]
[-0.04052623 -0.97864493 0.2015235 -0.01954797]
[-0.00938451 0.20205311 0.9793296 -0.31564958]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[-0.9991344 -0.04052623 -0.00938451 0.00346171]
[0.03779733 -0.97864493 0.20205311 0.04437447]
[-0.01737255 0.2015235 0.9793296 0.31318982]
[0. 0. 0. 1.]]

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

-0.0171349919017

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

[0.23500685 -9.78048752 -0.67472847]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [647.5037713837596, 860.2835166759764]
Principal point: [300.2422691674086, 231.85601047756396]
Distortion model: radtan
Distortion coefficients: [0.16886766443276924, -0.27983955532486726, 0.0023200396979456417, -0.003111586927134966]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.02 [m]
 Spacing 0.006 [m]

IMU configuration

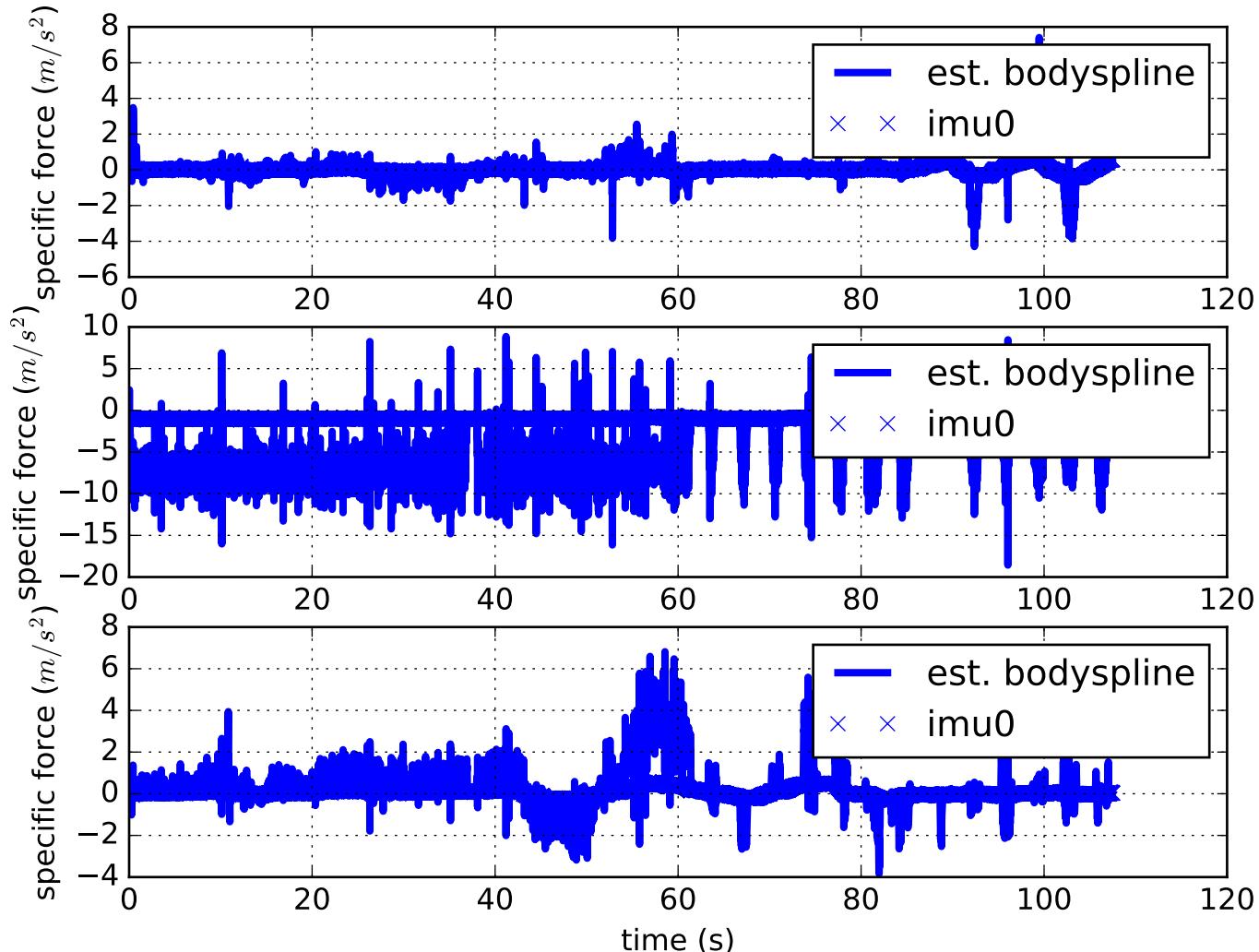
IMU0:

Model: calibrated
Update rate: 100.0
Accelerometer:
 Noise density: 0.043146141981
 Noise density (discrete): 0.43146141981
 Random walk: 0.0612122072734
Gyroscope:
 Noise density: 0.187866882342
 Noise density (discrete): 1.87866882342
 Random walk: 0.0214450075787

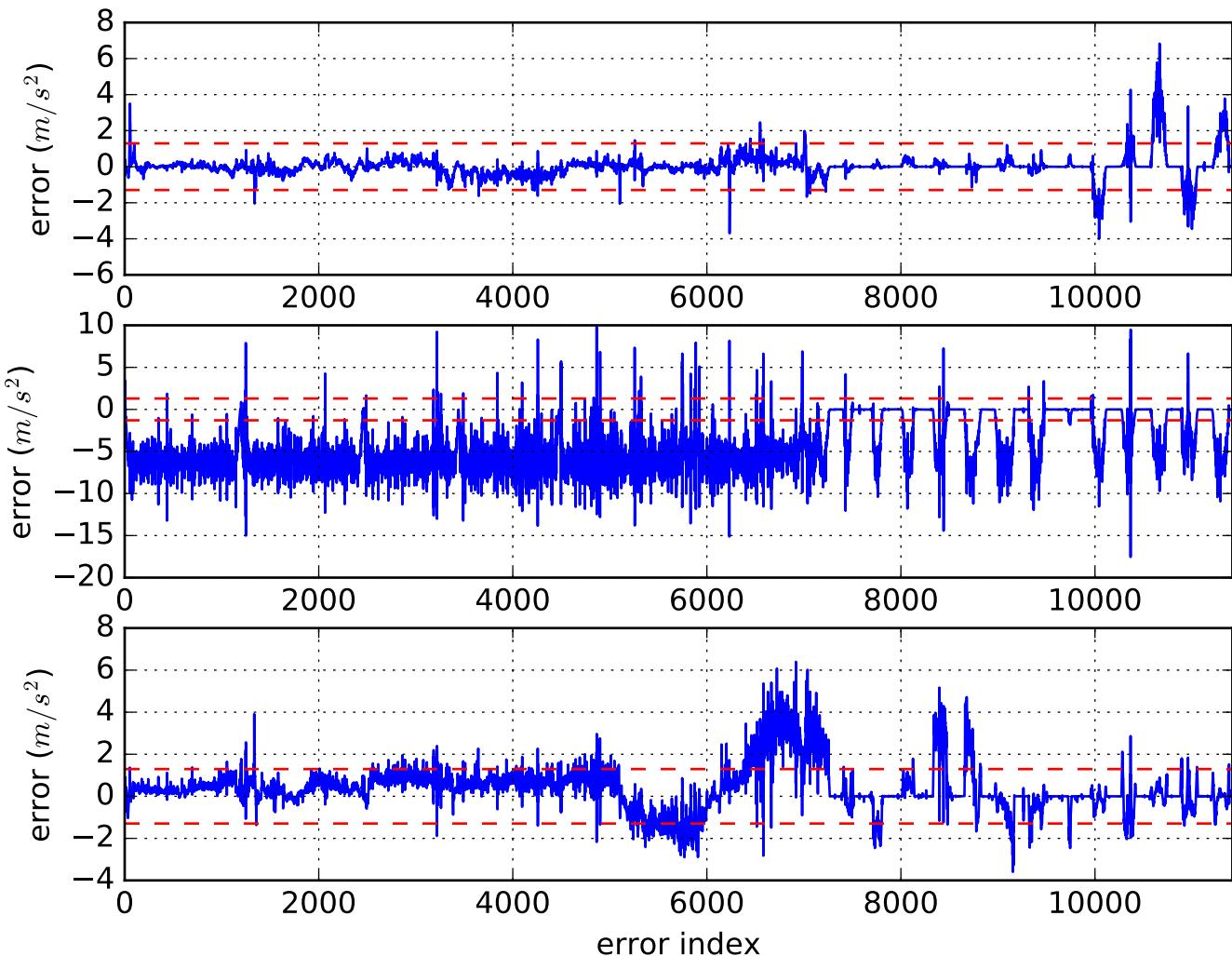
$T_{i,b}$
[[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]
 [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

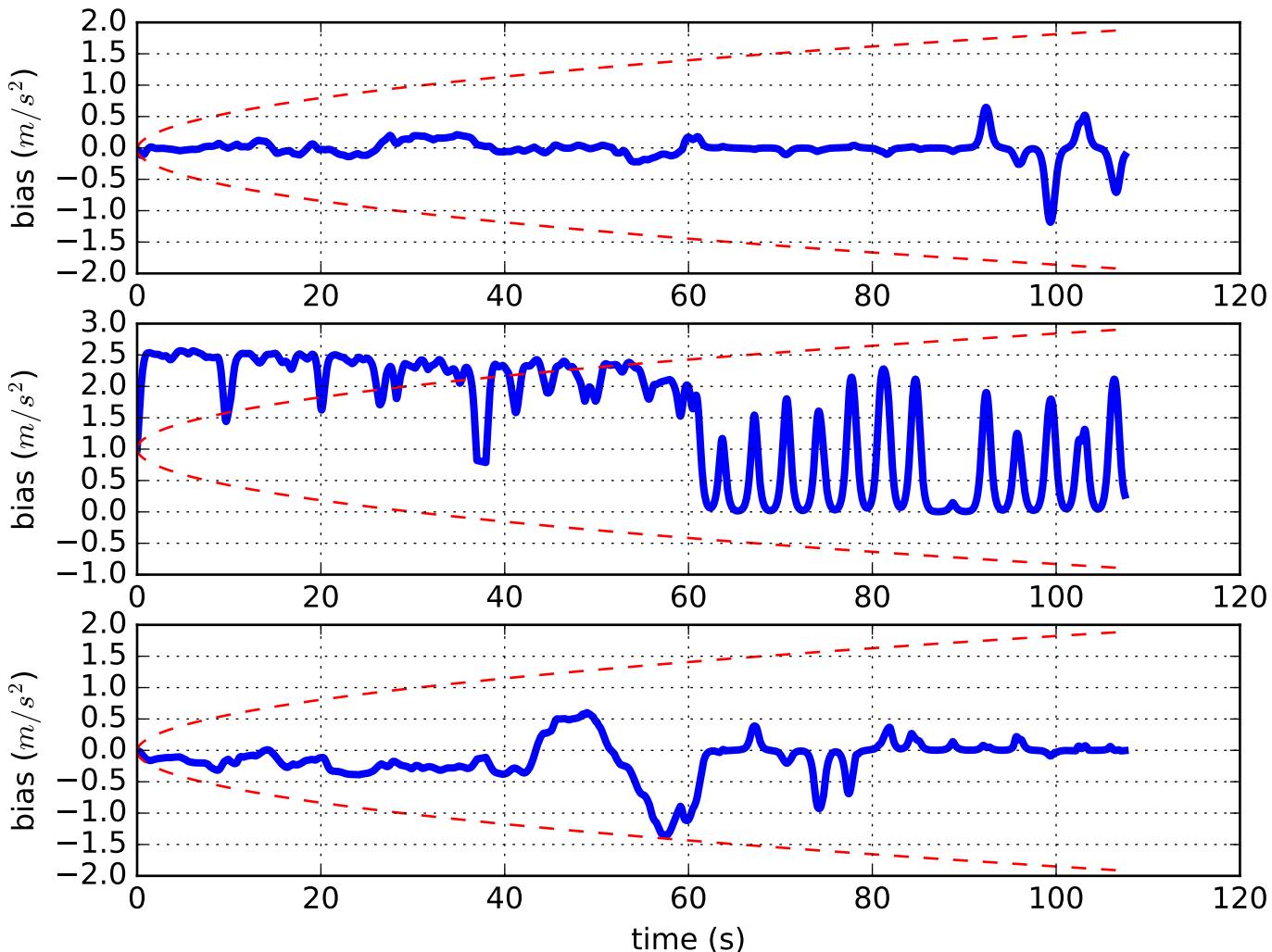
Comparison of predicted and measured specific force (imu0 frame)



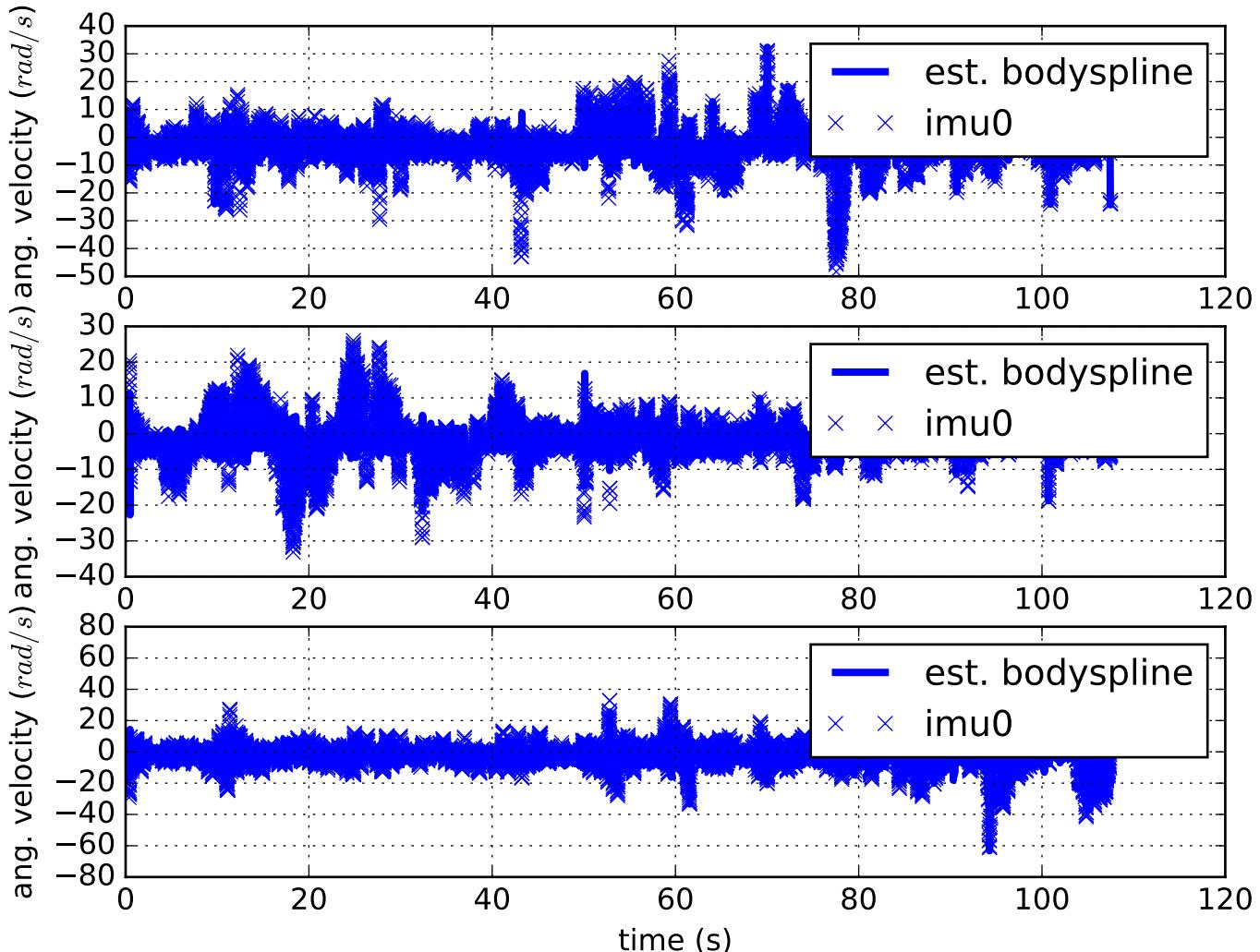
imu0: acceleration error



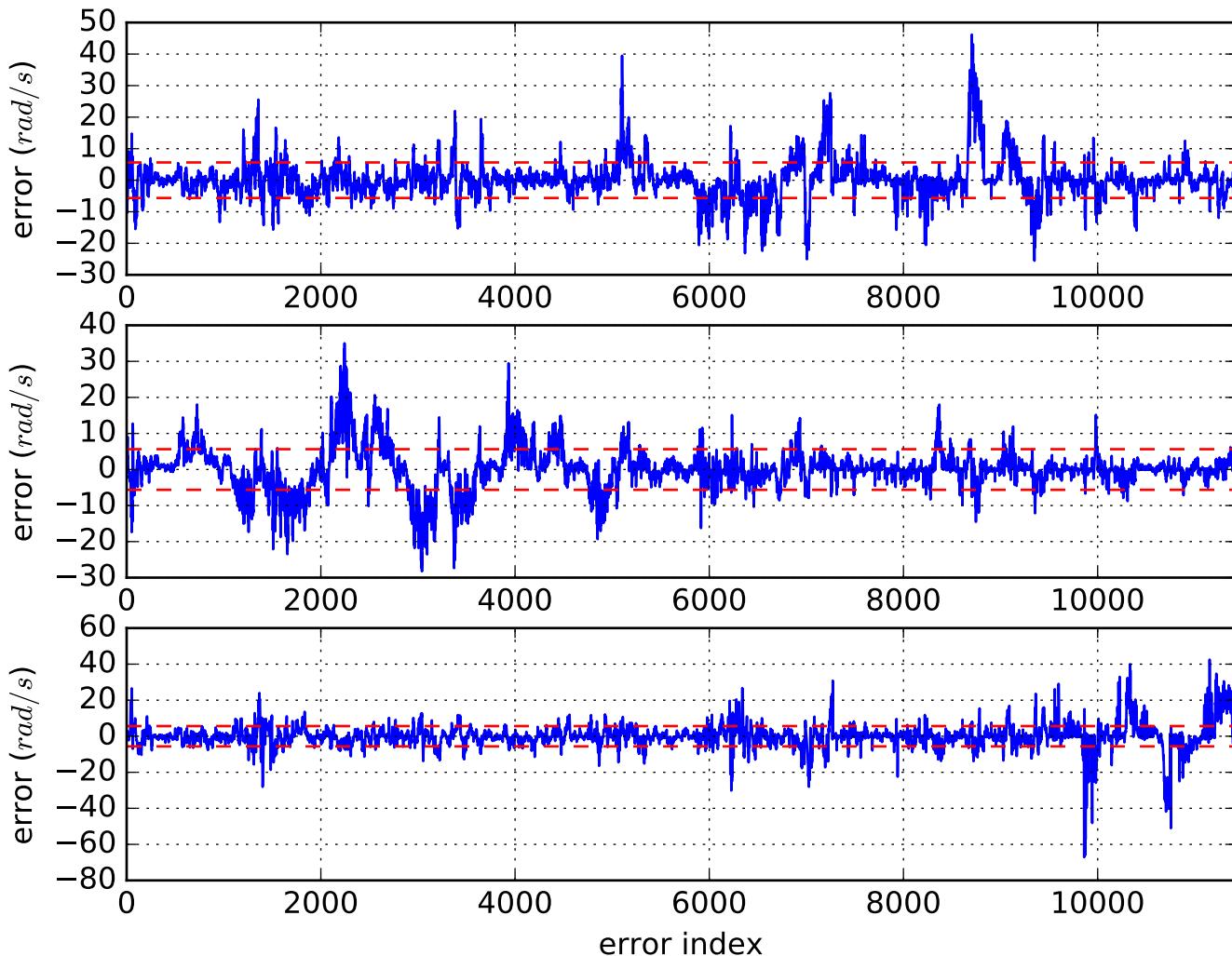
imu0: estimated accelerometer bias (imu frame)



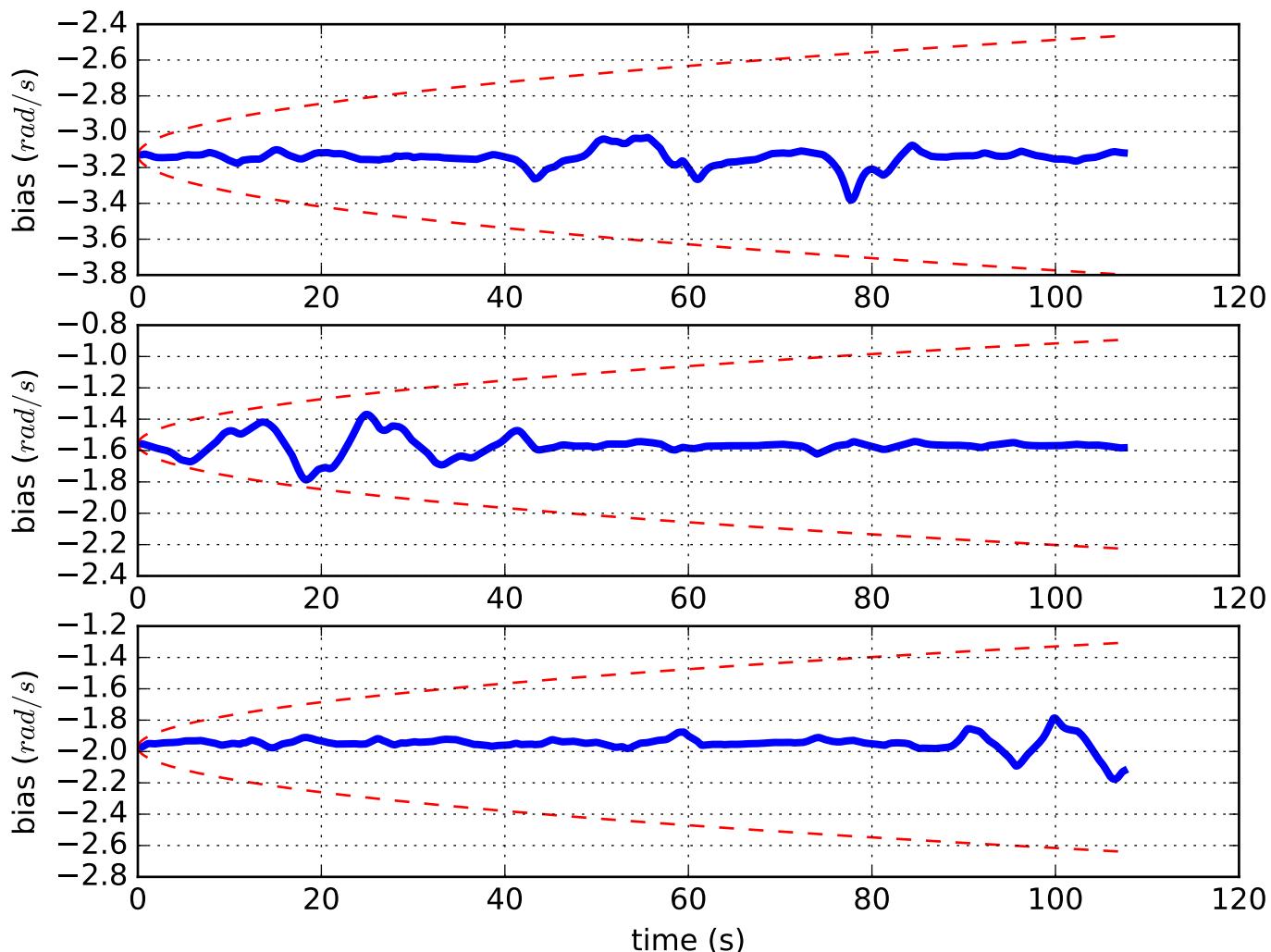
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

