

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.55226959554, median 0.511733502007, std: 0.298642038079

Gyroscope error (imu0): mean 0.0516823550254, median 0.0426404165163, std: 0.0396811328972

Accelerometer error (imu0): mean 0.170756283094, median 0.188877114498, std: 0.10598380847

Residuals

Reprojection error (cam0) [px]: mean 0.55226959554, median 0.511733502007, std: 0.298642038079

Gyroscope error (imu0) [rad/s]: mean 9.70940291069, median 8.01072211267, std: 7.45477072518

Accelerometer error (imu0) [m/s^2]: mean 7.36747483451, median 8.1493187991, std: 4.57279244792

Transformation (cam0):

T_ci: (imu0 to cam0):

[[-0.88975691 -0.04725114 0.45398234 -0.00020919]
[0.19214267 -0.94097851 0.2786407 0.00039368]
[0.41402154 0.33515187 0.84632109 0.00181643]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[-0.88975691 0.19214267 0.41402154 -0.00101381]
[-0.04725114 -0.94097851 0.33515187 -0.00024821]
[0.45398234 0.2786407 0.84632109 -0.00155201]
[0. 0. 0. 1.]]

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

-0.0194923825649

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

[1.34282985 -9.49792861 -2.03827941]

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

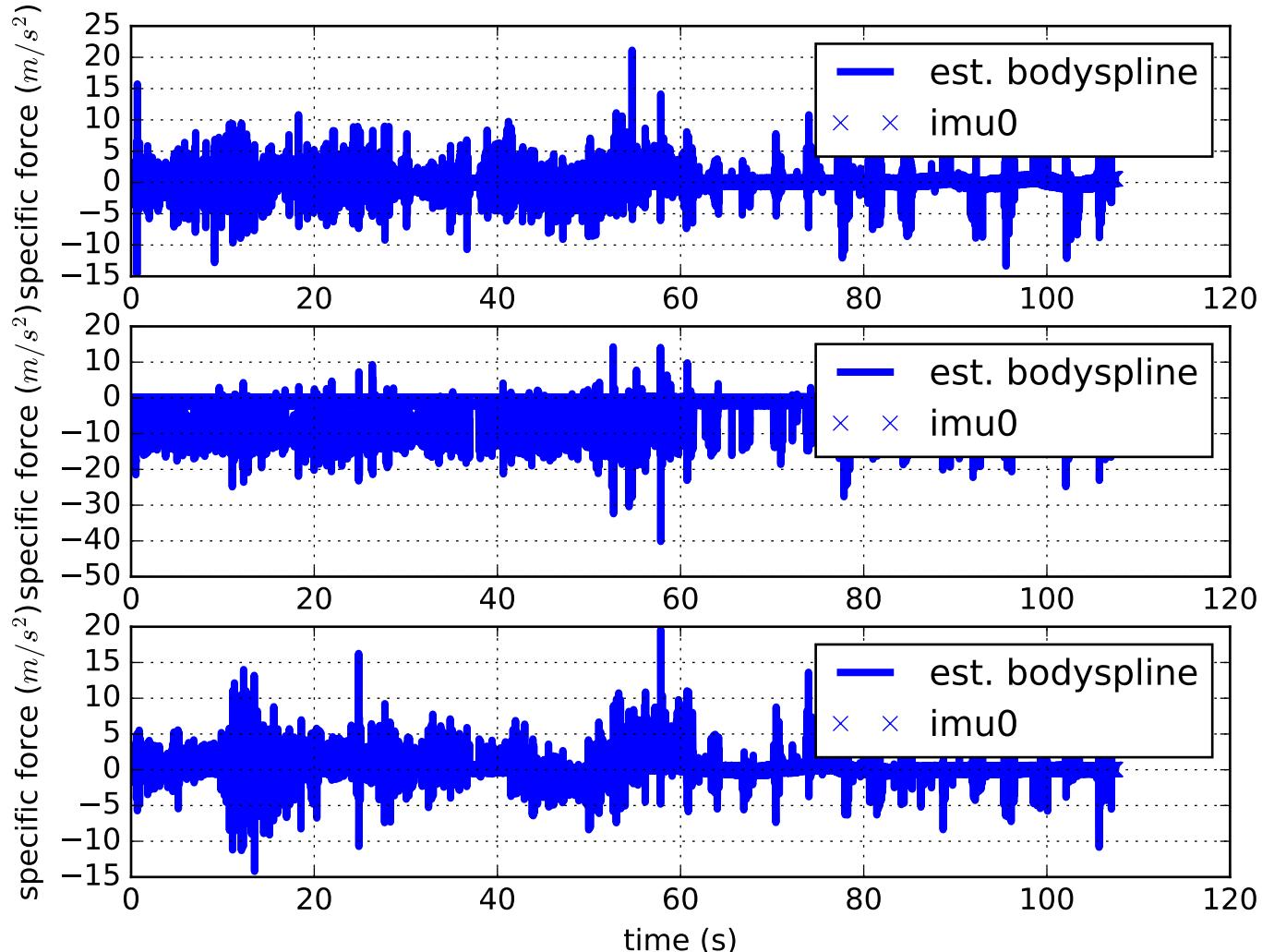
IMU0:

 Model: calibrated
 Update rate: 100.0
 Accelerometer:
 Noise density: 4.3146141981
 Noise density (discrete): 43.146141981
 Random walk: 6.12122072734
 Gyroscope:
 Noise density: 18.7866882342
 Noise density (discrete): 187.866882342
 Random walk: 2.14450075787

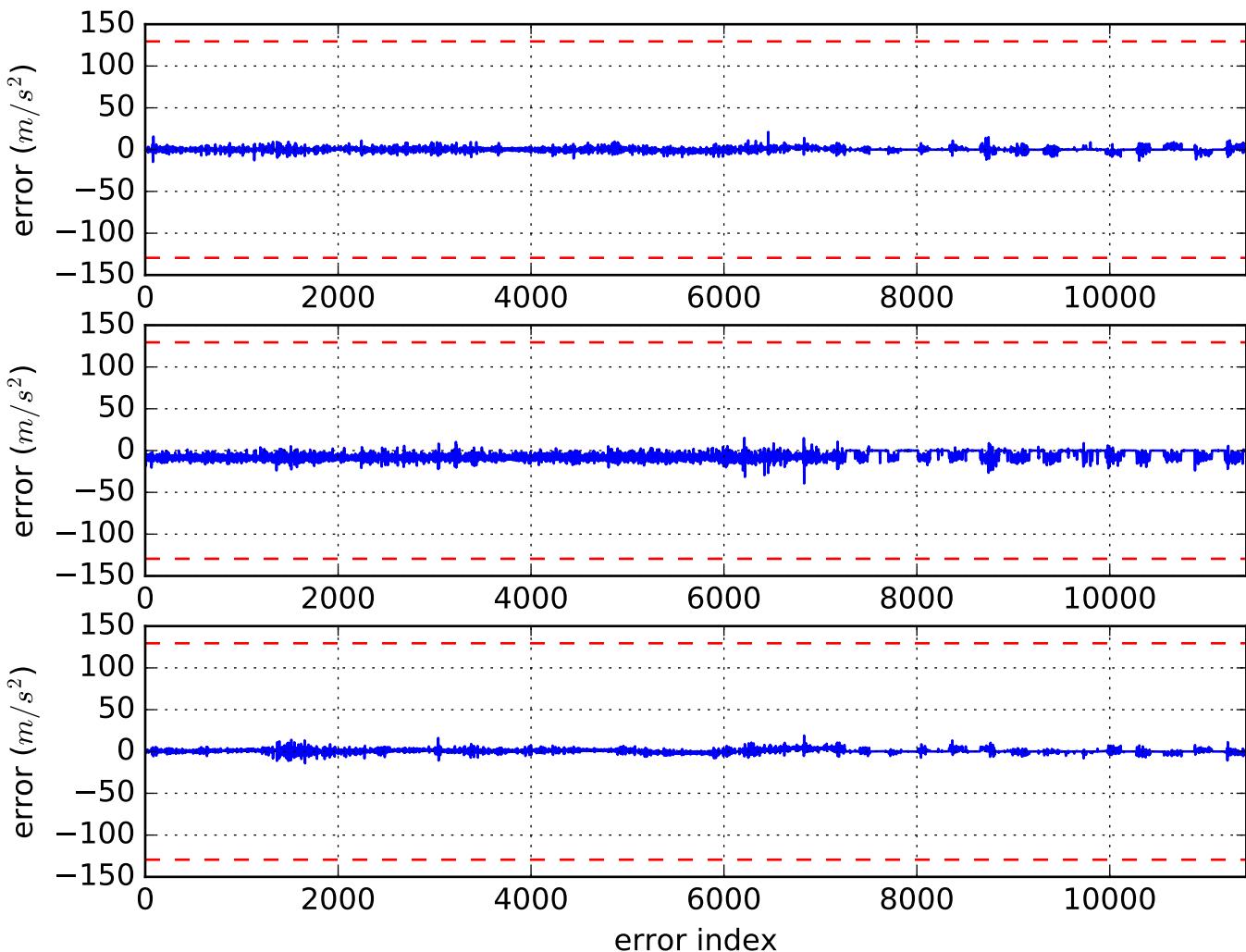
$T_{i,b}$
 [[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]
 [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

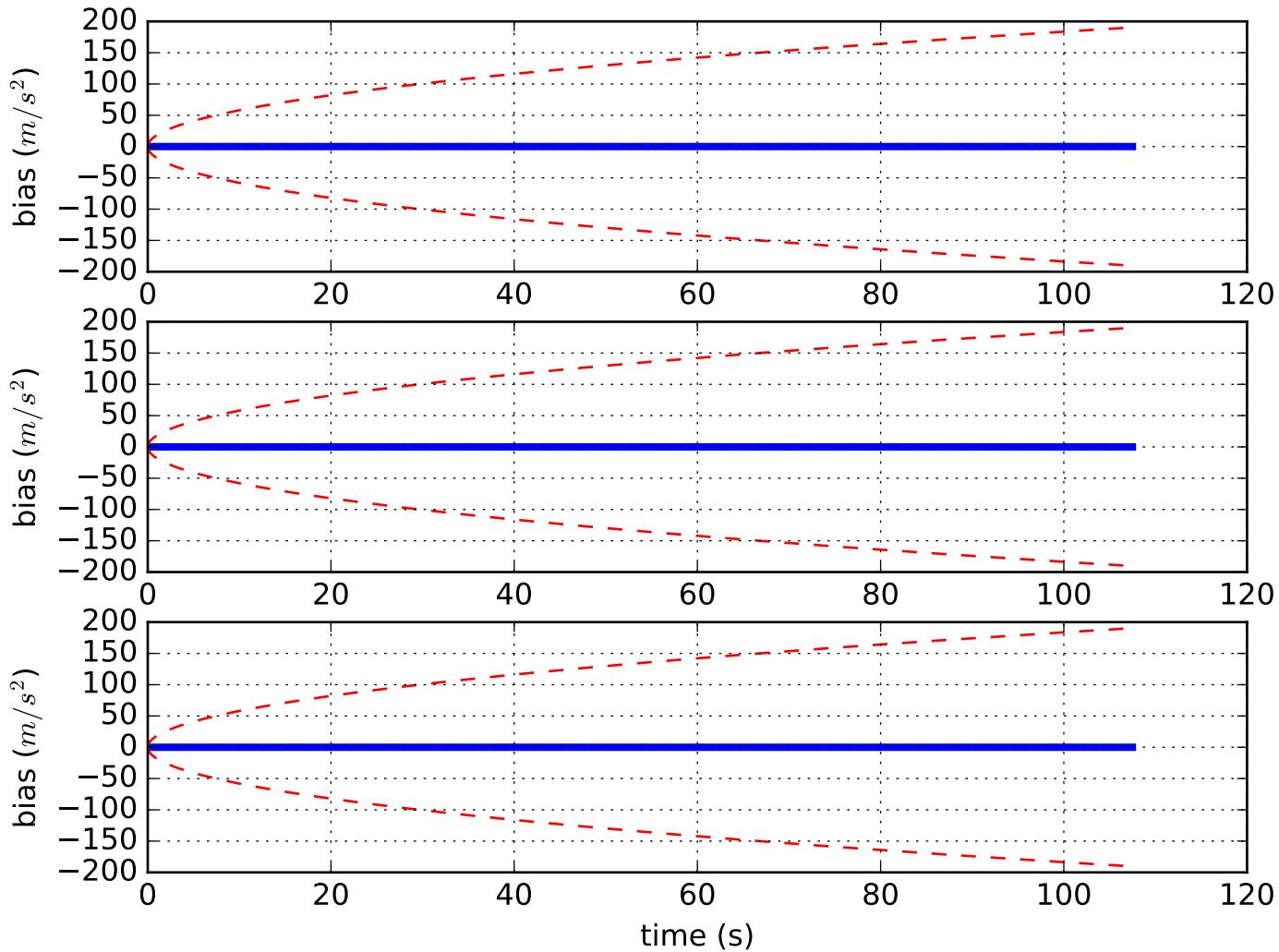
Comparison of predicted and measured specific force (imu0 frame)



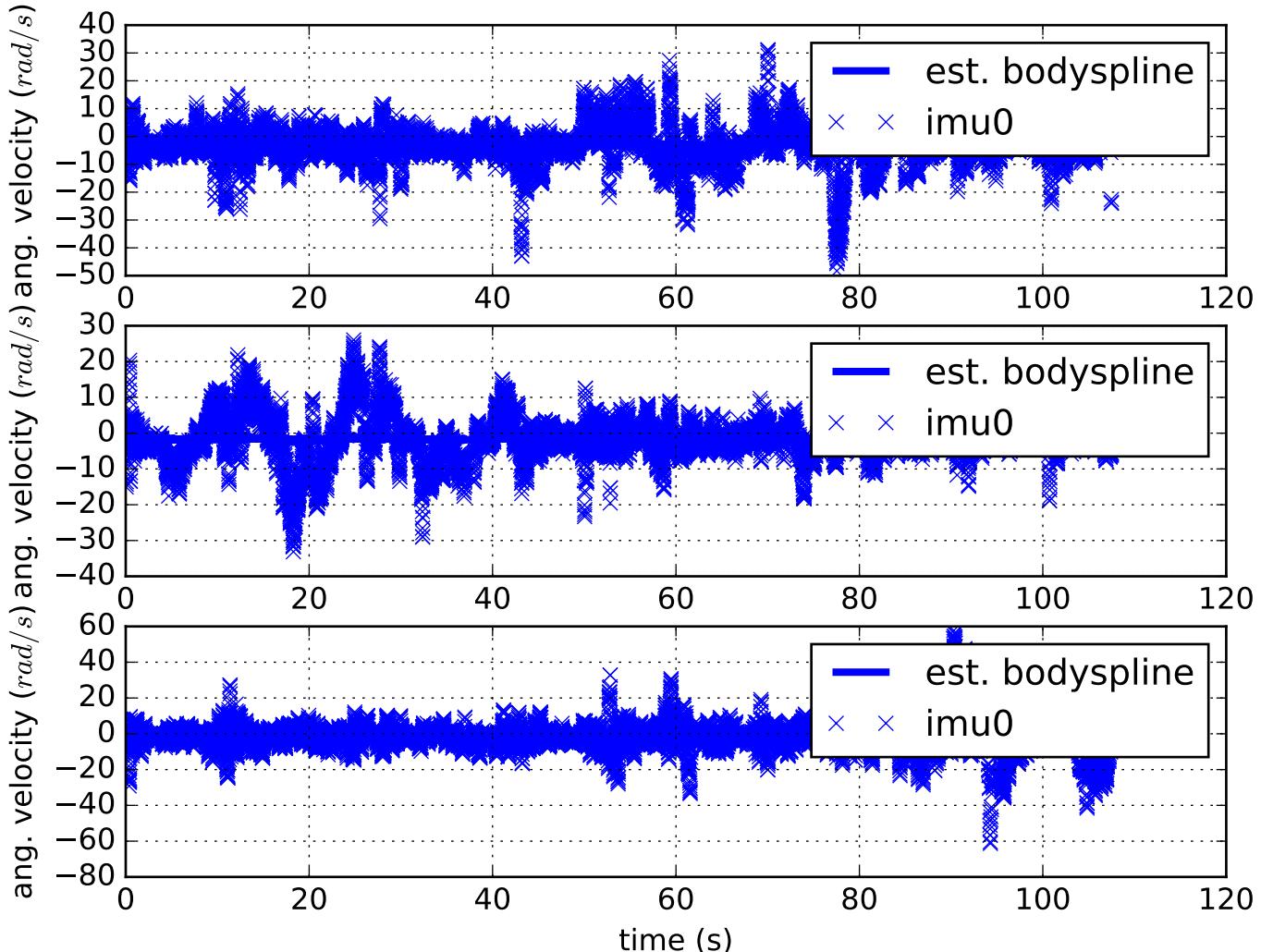
imu0: acceleration error



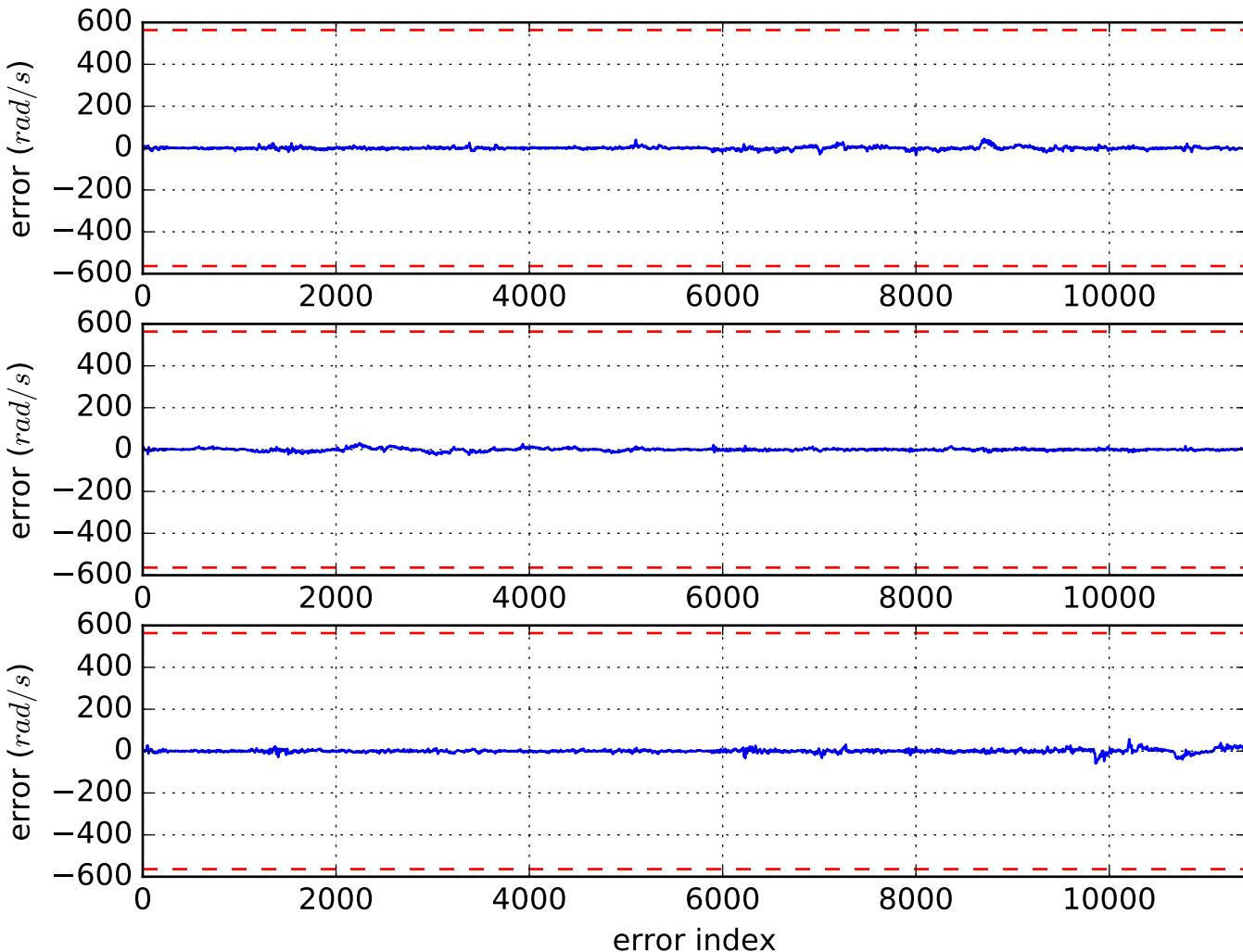
imu0: estimated accelerometer bias (imu frame)



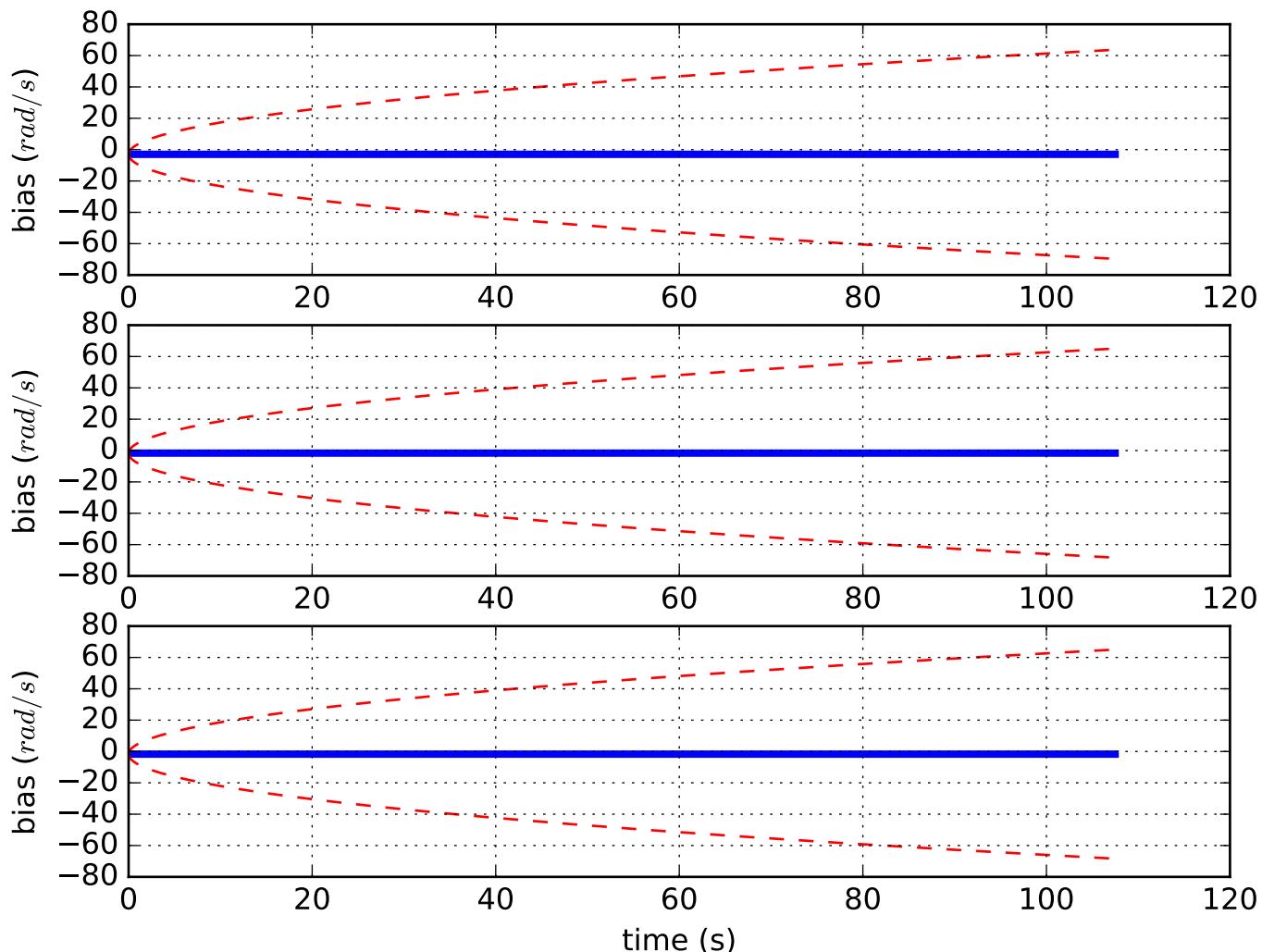
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

