

Calibration results

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Normalized Residuals

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Reprojection error (cam0): mean 6.13894794434, median 4.32556383227, std: 7.90128924991

Gyroscope error (imu0): mean 70.6025953904, median 59.6551941547, std: 52.2666477602

Accelerometer error (imu0): mean 12.4357650006, median 7.7398241837, std: 14.3274679742

Residuals

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Reprojection error (cam0) [px]: mean 6.13894794434, median 4.32556383227, std: 7.90128924991

Gyroscope error (imu0) [rad/s]: mean 2.27143728929, median 1.91923585462, std: 1.68153043174

Accelerometer error (imu0) [m/s^2]: mean 0.1501767853, median 0.0934676648072, std: 0.17302136875

Transformation (cam0):

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T\_ci: (imu0 to cam0):

[ [ 0.99700272 0.07721722 0.00480288 -0.17469862 ]  
[ -0.07713951 0.99691226 -0.01467787 -0.01993201 ]  
[ -0.00592143 0.01426339 0.99988074 0.34921364 ]  
[ 0. 0. 0. 1. ] ]

T\_ic: (cam0 to imu0):

[ [ 0.99700272 -0.07713951 -0.00592143 0.1747053 ]  
[ 0.07721722 0.99691226 0.01426339 0.02837924 ]  
[ 0.00480288 -0.01467787 0.99988074 -0.34862549 ]  
[ 0. 0. 0. 1. ] ]

timeshift cam0 to imu0: [s] (t\_imu = t\_cam + shift)

-0.176073708662

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

[ 0.09560991 -9.78647122 -0.61988933 ]

Calibration configuration

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cam0

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Camera model: pinhole  
Focal length: [657.6283690104826, 874.8200413515597]  
Principal point: [295.29354482420024, 230.72956849302324]  
Distortion model: radtan  
Distortion coefficients: [0.21423558354382966, -0.30586368141414483, -0.00030595444685297177, -0.009906257253676505]  
Type: aprilgrid  
Tags:  
  Rows: 6  
  Cols: 6  
  Size: 0.03 [m]  
  Spacing 0.009 [m]

## IMU configuration

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### IMU0:

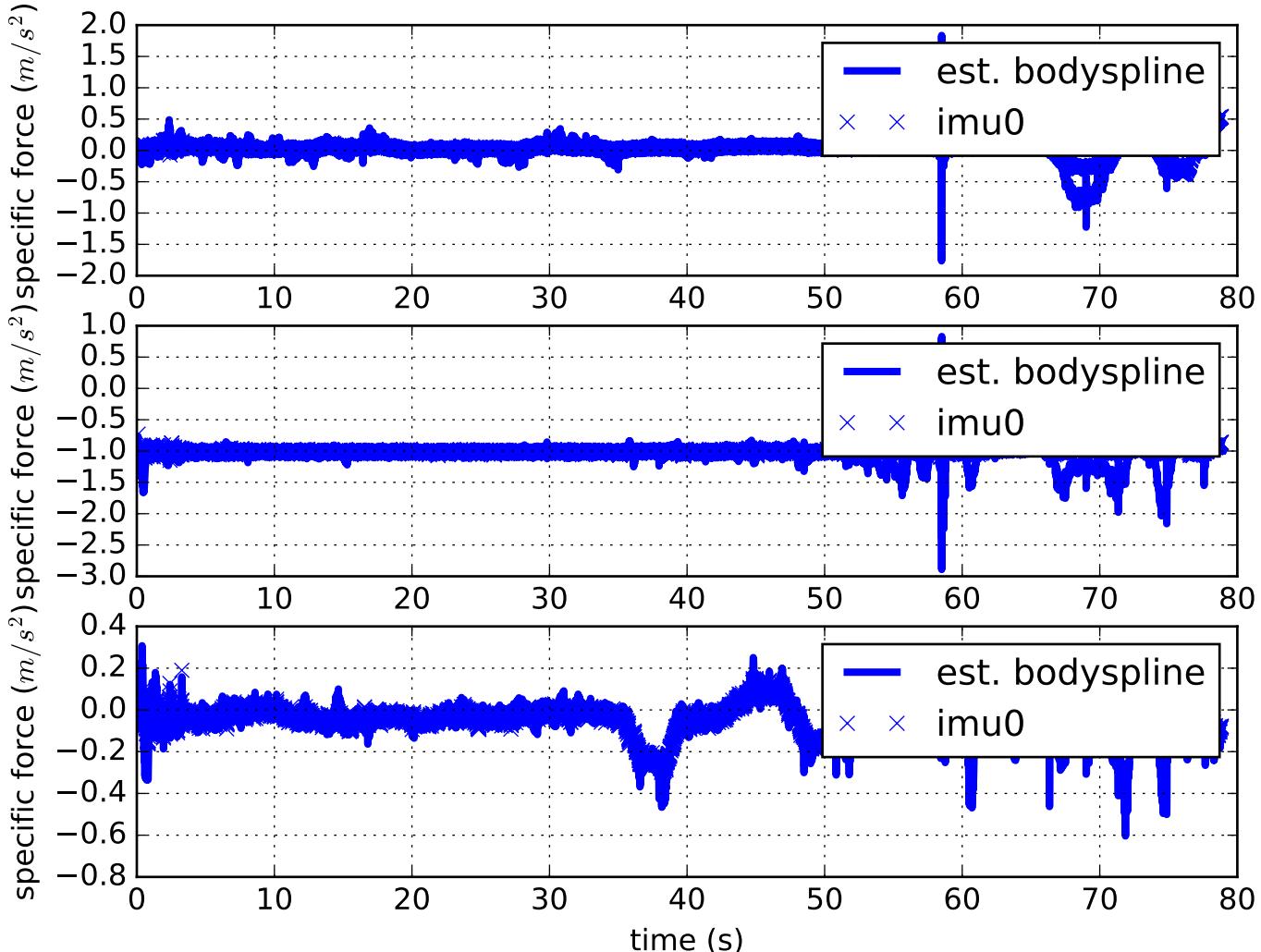
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Model: calibrated  
Update rate: 100.0  
Accelerometer:  
  Noise density: 0.00120762  
  Noise density (discrete): 0.0120762  
  Random walk: 0.000610349  
Gyroscope:  
  Noise density: 0.003217215  
  Noise density (discrete): 0.03217215  
  Random walk: 0.025176411

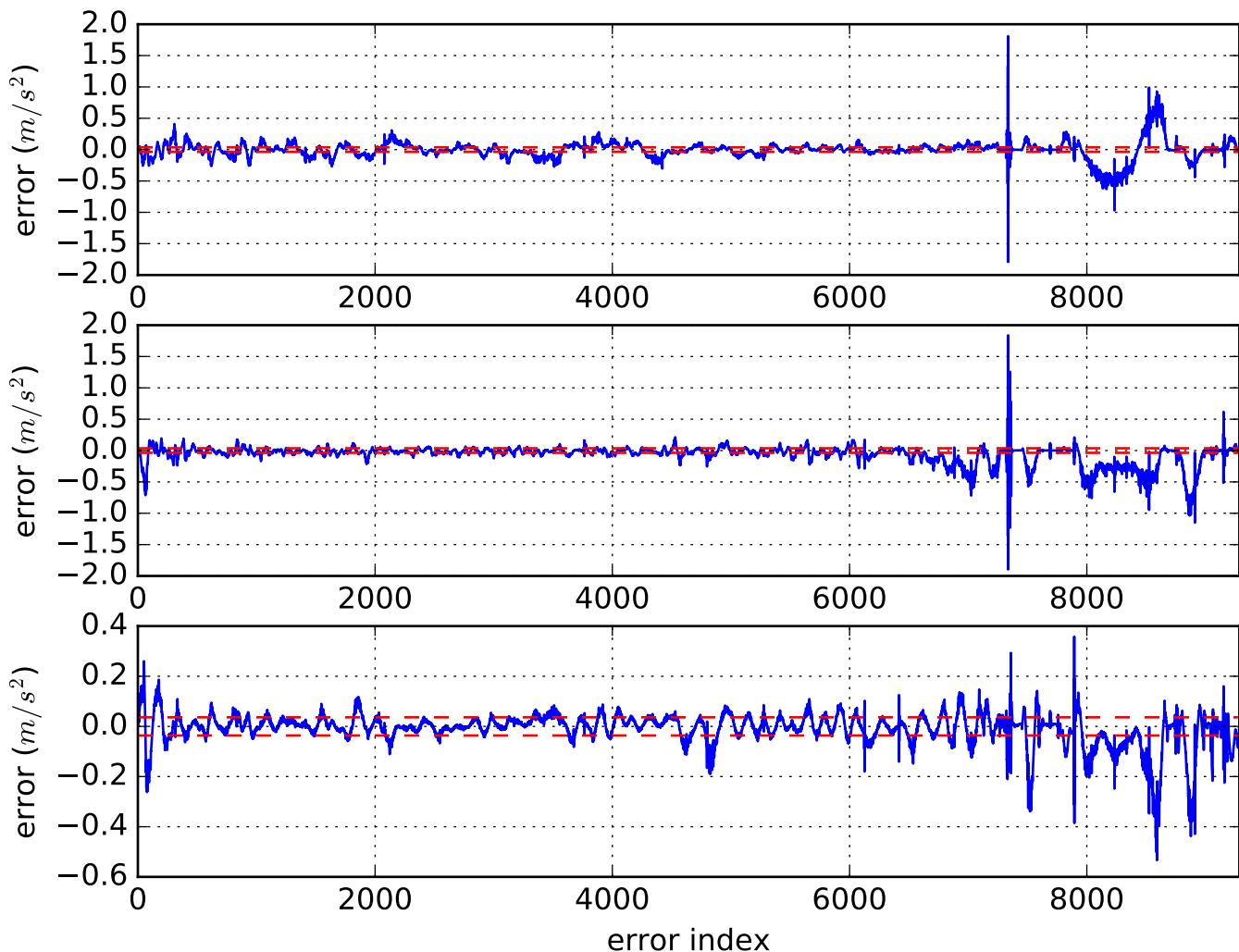
$T_{i,b}$   
[[ 1. 0. 0. 0.]  
 [ 0. 1. 0. 0.]  
 [ 0. 0. 1. 0.]  
 [ 0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

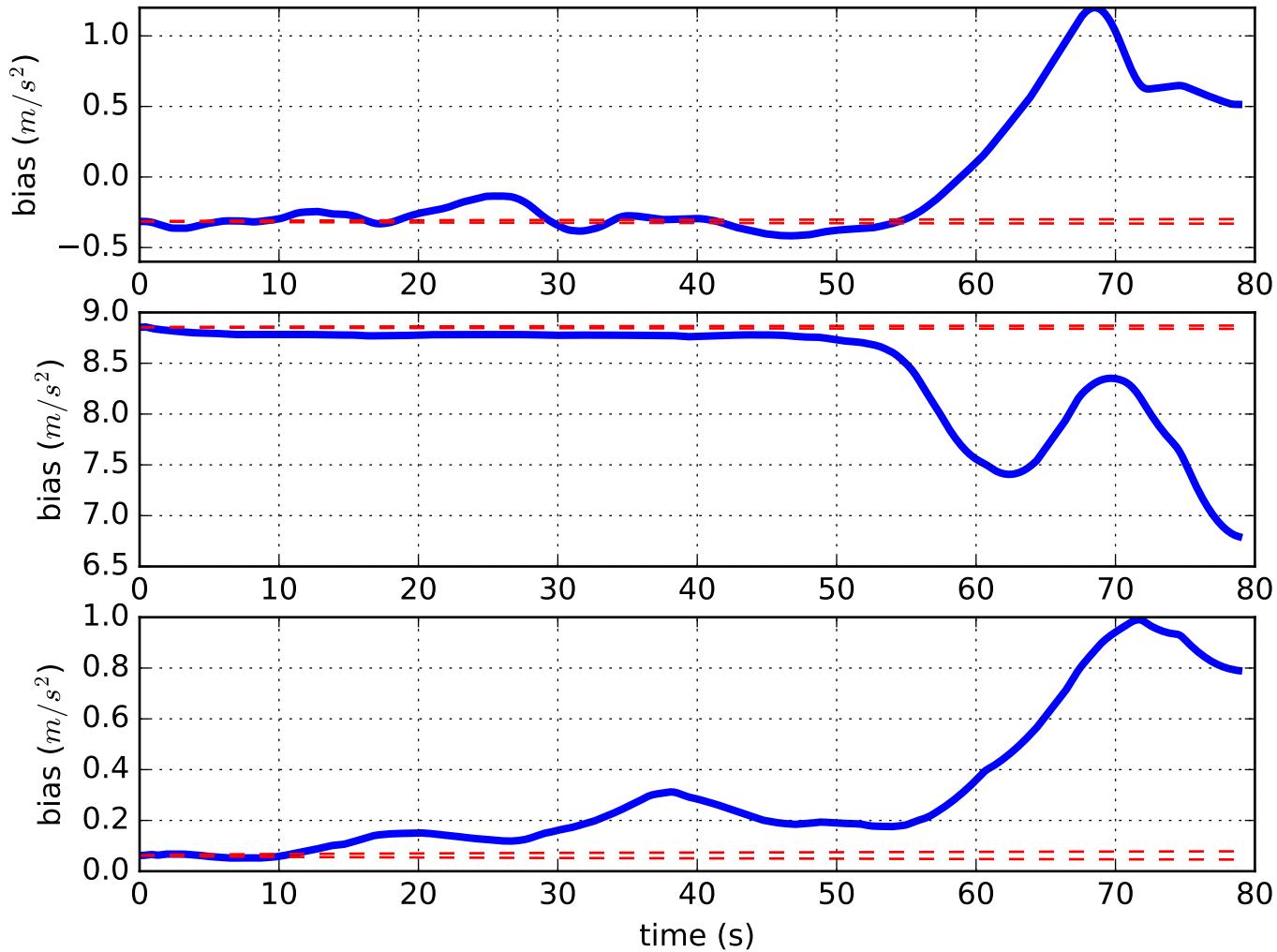
Comparison of predicted and measured specific force (imu0 frame)



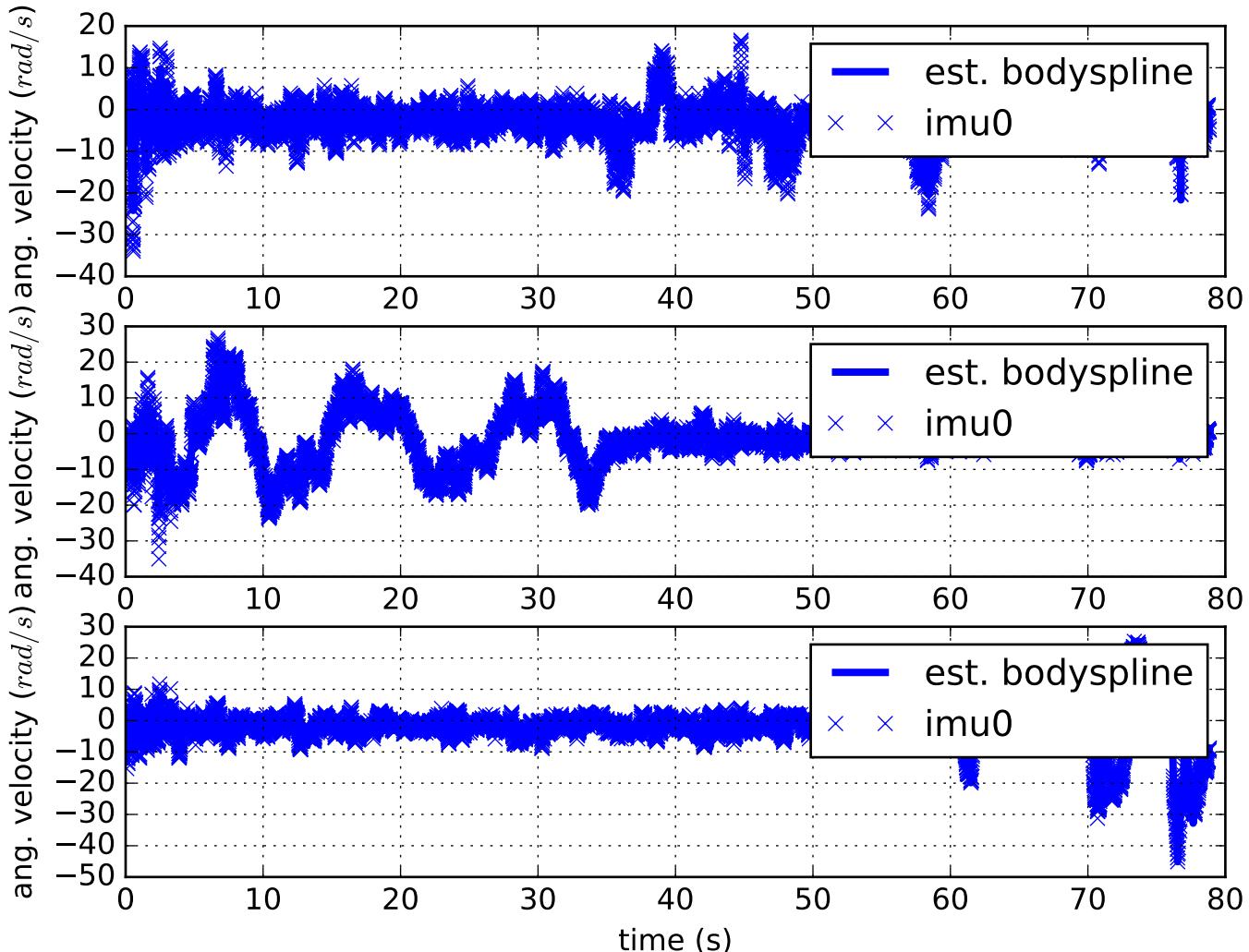
imu0: acceleration error



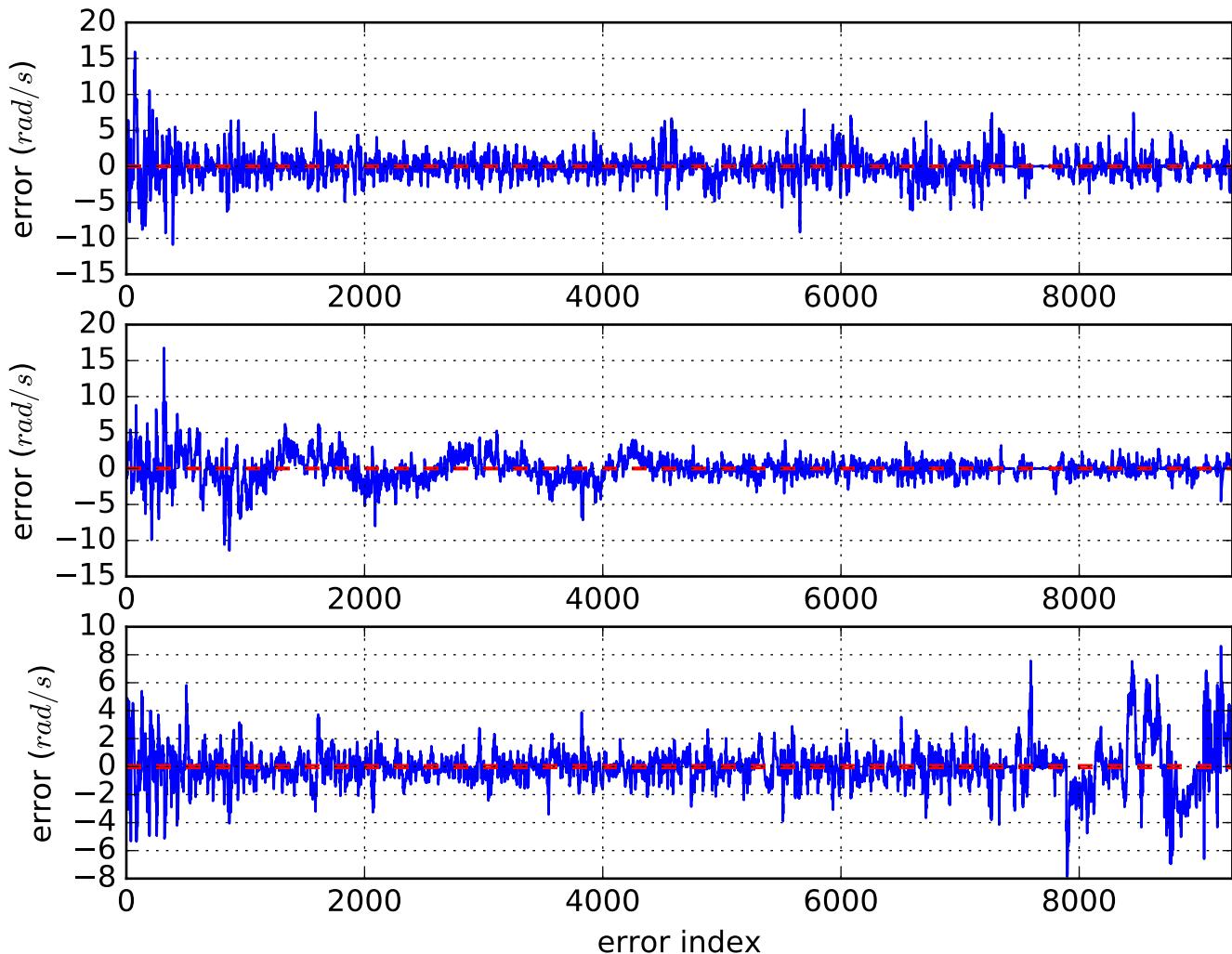
# imu0: estimated accelerometer bias (imu frame)



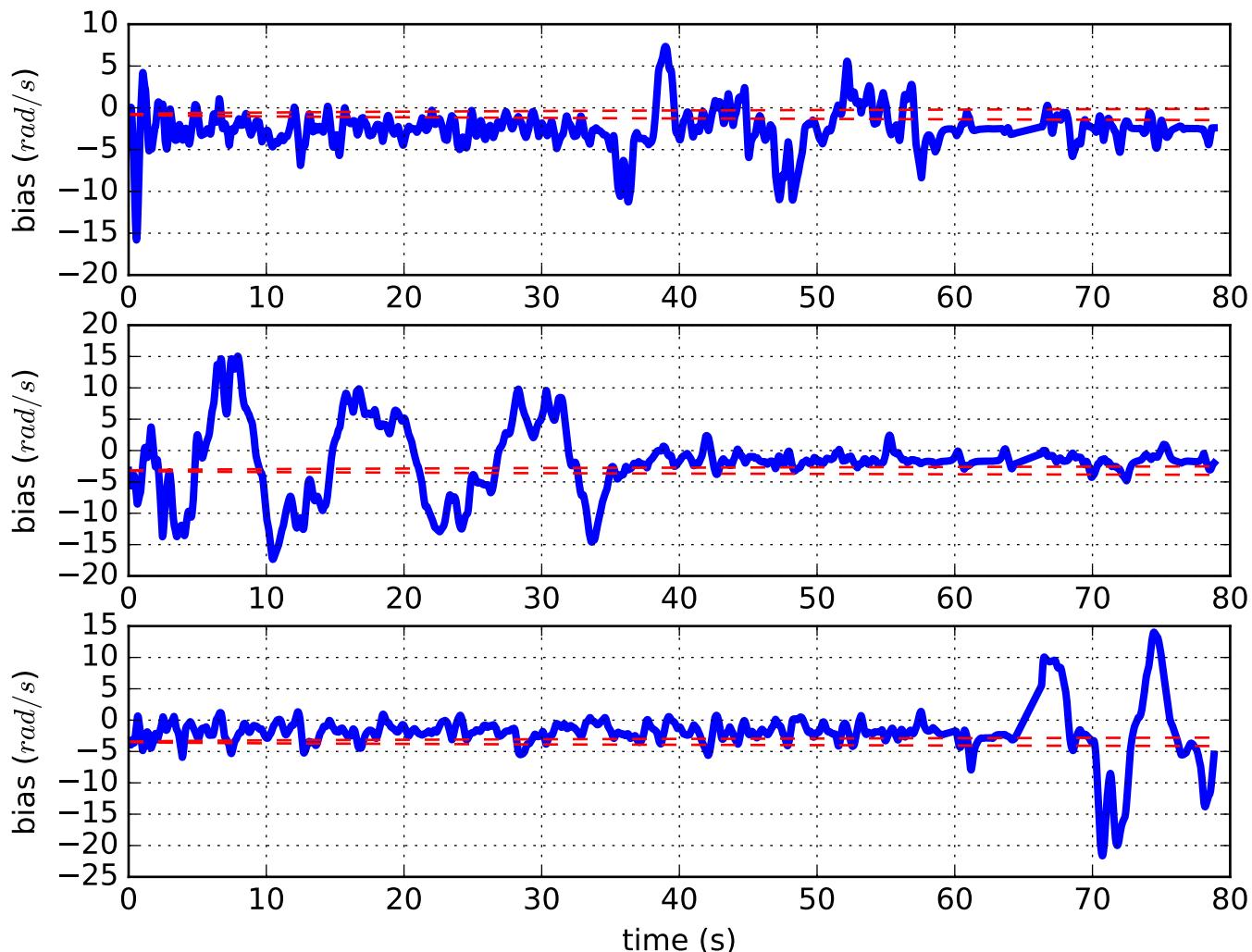
Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

