

Calibration results

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Normalized Residuals

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Reprojection error (cam0): mean 0.256143412418, median 0.22219196414, std: 0.174916777679

Gyroscope error (imu0): mean 1.43704509189, median 1.21212015398, std: 0.960301930365

Accelerometer error (imu0): mean 0.962228577095, median 0.782908999816, std: 0.958441824926

Residuals

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Reprojection error (cam0) [px]: mean 0.256143412418, median 0.22219196414, std: 0.174916777679

Gyroscope error (imu0) [rad/s]: mean 0.00424748329666, median 0.00358267123045, std: 0.00283837050904

Accelerometer error (imu0) [m/s^2]: mean 0.0184524033039, median 0.0150136391277, std: 0.0183797857577

Transformation (cam0):

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T\_ci: (imu0 to cam0):

[ [ 0.00544323 -0.99998505 0.00051641 -0.12823753 ]  
[ -0.01044852 -0.00057326 -0.99994525 -0.08880242 ]  
[ 0.9999306 0.00543754 -0.01045148 0.28605544 ]  
[ 0. 0. 0. 1. ] ]

T\_ic: (cam0 to imu0):

[ [ 0.00544323 -0.01044852 0.9999306 -0.28626541 ]  
[ -0.99998505 -0.00057326 0.00543754 -0.12984196 ]  
[ 0.00051641 -0.99994525 -0.01045148 -0.08574163 ]  
[ 0. 0. 0. 1. ] ]

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

0.010361691461452714

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

[ 0.10180553 -9.79662903 -0.4290899 ]

Calibration configuration

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cam0

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Camera model: pinhole  
Focal length: [3854.426, 3835.6137]  
Principal point: [526.8109, 312.4926]  
Distortion model: radtan  
Distortion coefficients: [0.0422, -2.0858, -0.0025, 0.001]  
Type: aprilgrid  
Tags:  
  Rows: 6  
  Cols: 6  
  Size: 0.088 [m]  
  Spacing 0.0264 [m]

## IMU configuration

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### IMU0:

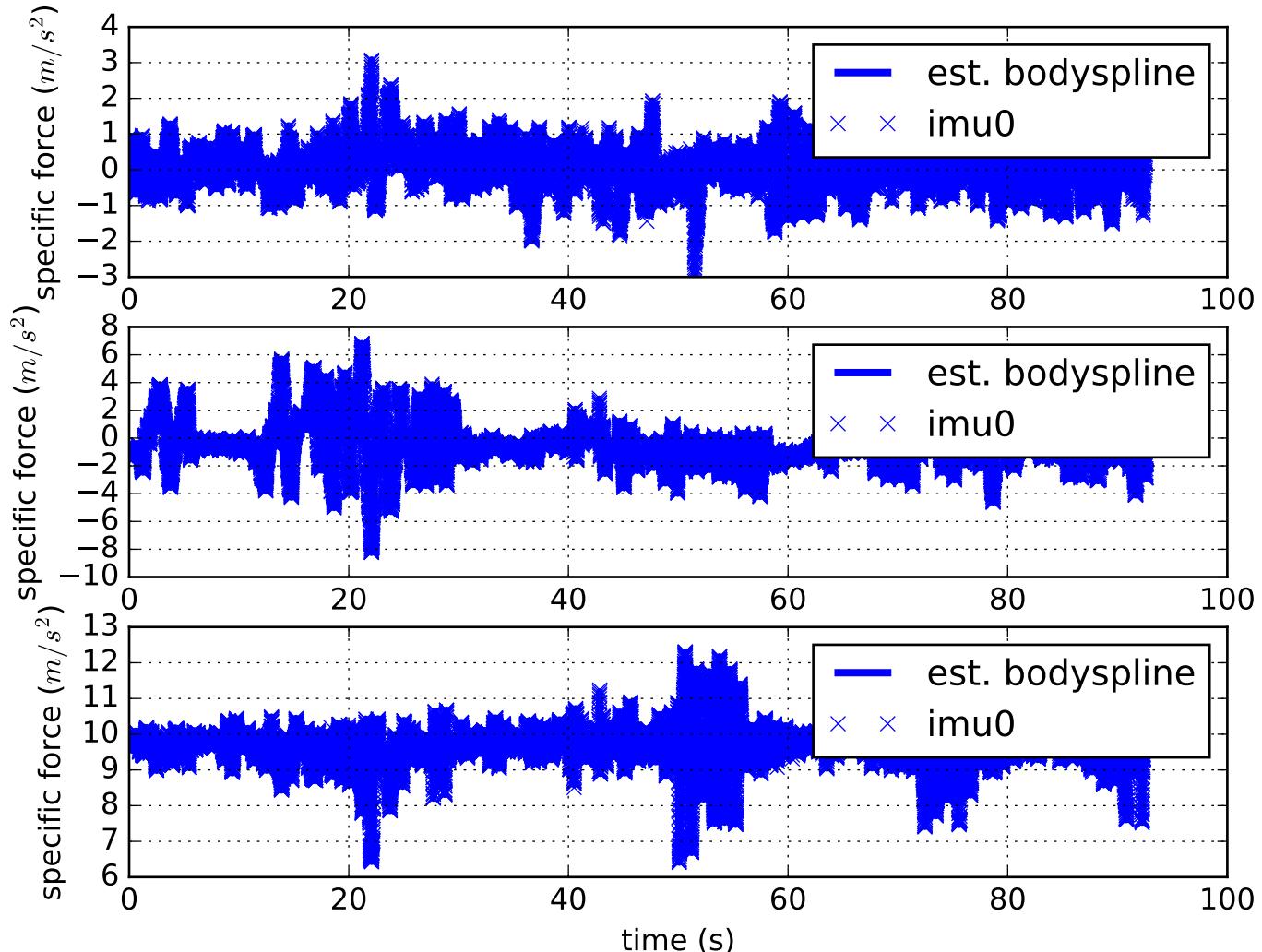
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  Model: calibrated  
  Update rate: 200.0  
  Accelerometer:  
    Noise density: 0.001356  
    Noise density (discrete): 0.0191767359058  
    Random walk: 2.2e-05  
  Gyroscope:  
    Noise density: 0.000209  
    Noise density (discrete): 0.00295570634536  
    Random walk: 2e-06

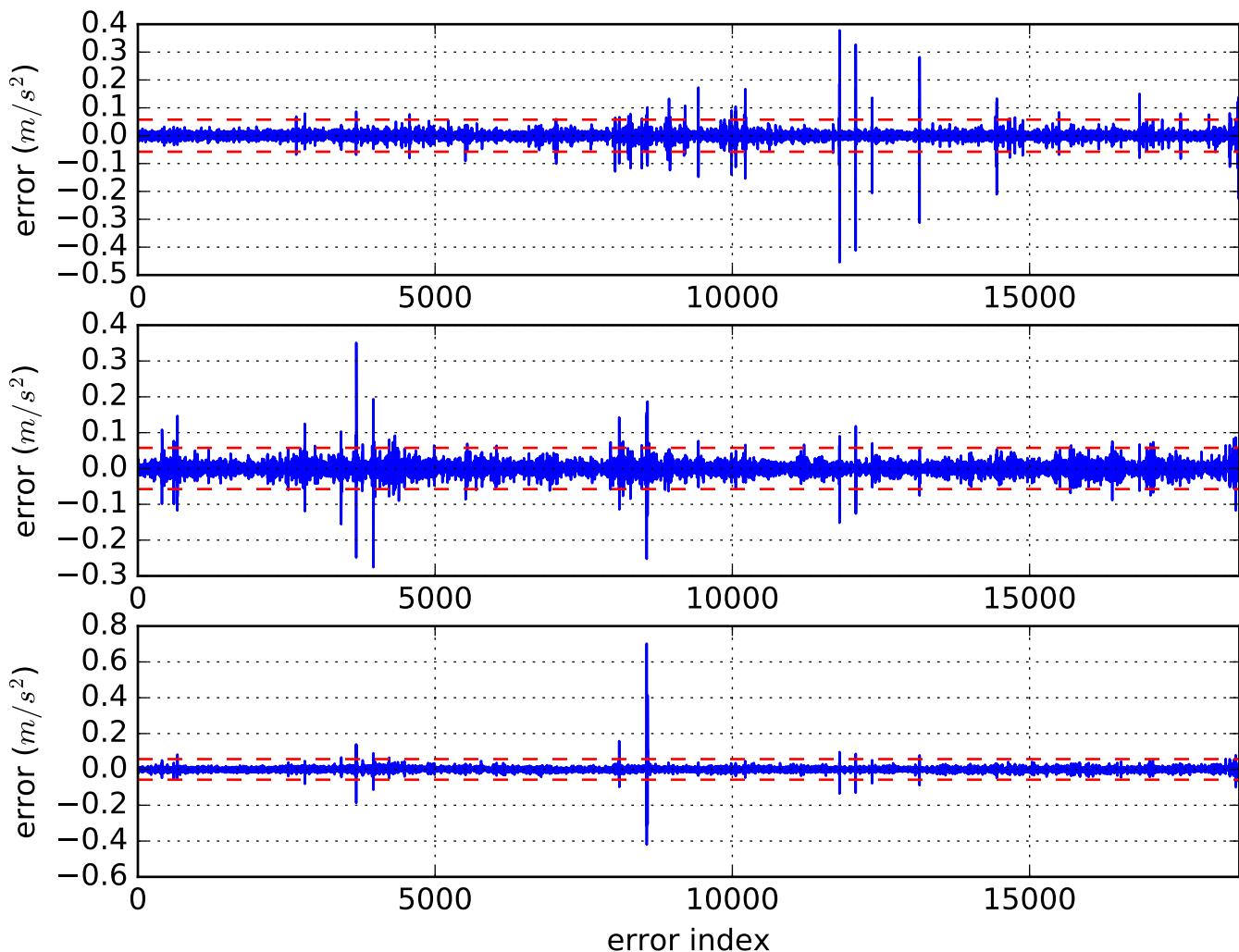
$T_{i,b}$   
  [[1. 0. 0. 0.]  
   [0. 1. 0. 0.]  
   [0. 0. 1. 0.]  
   [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

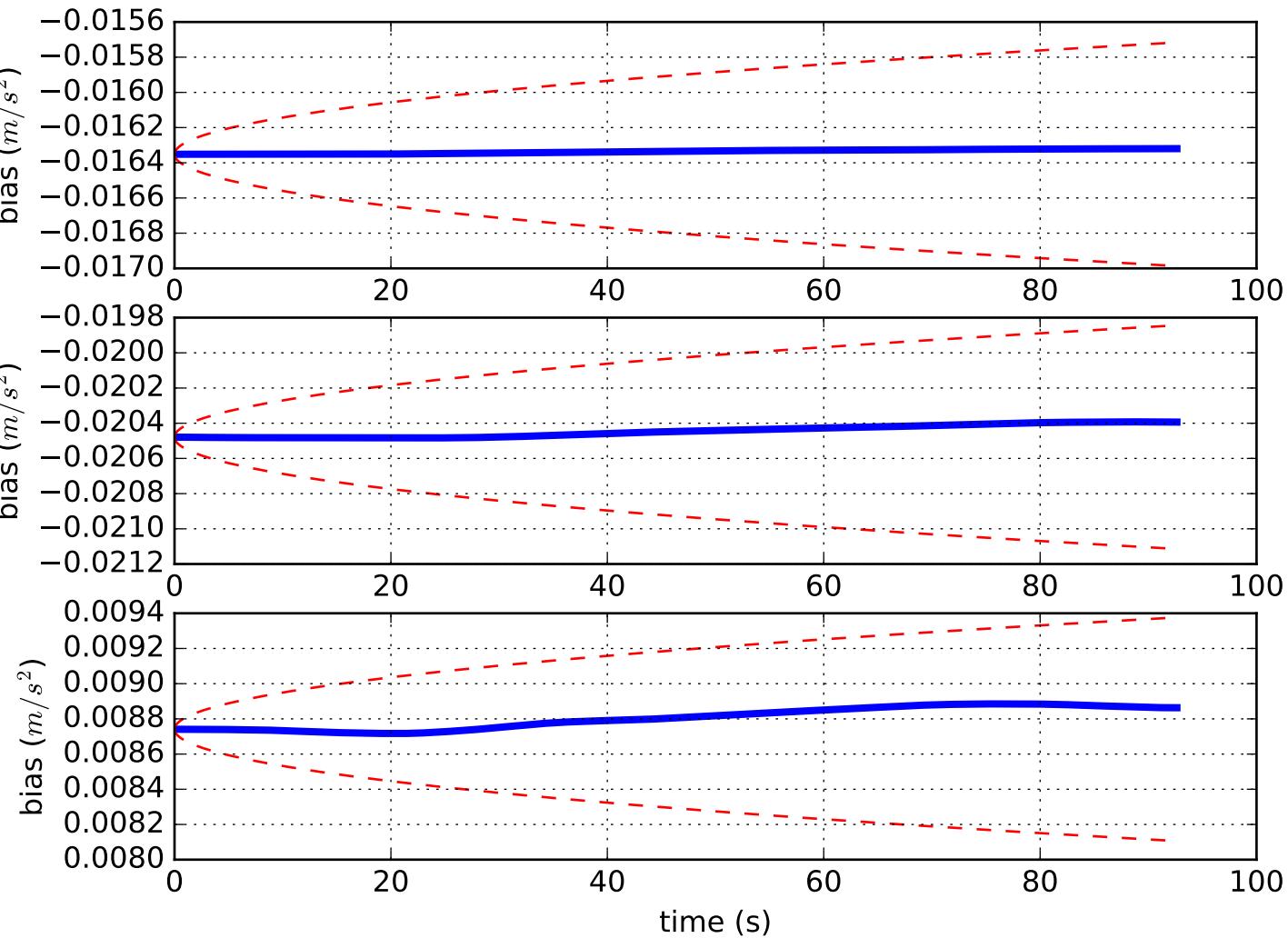
Comparison of predicted and measured specific force (imu0 frame)



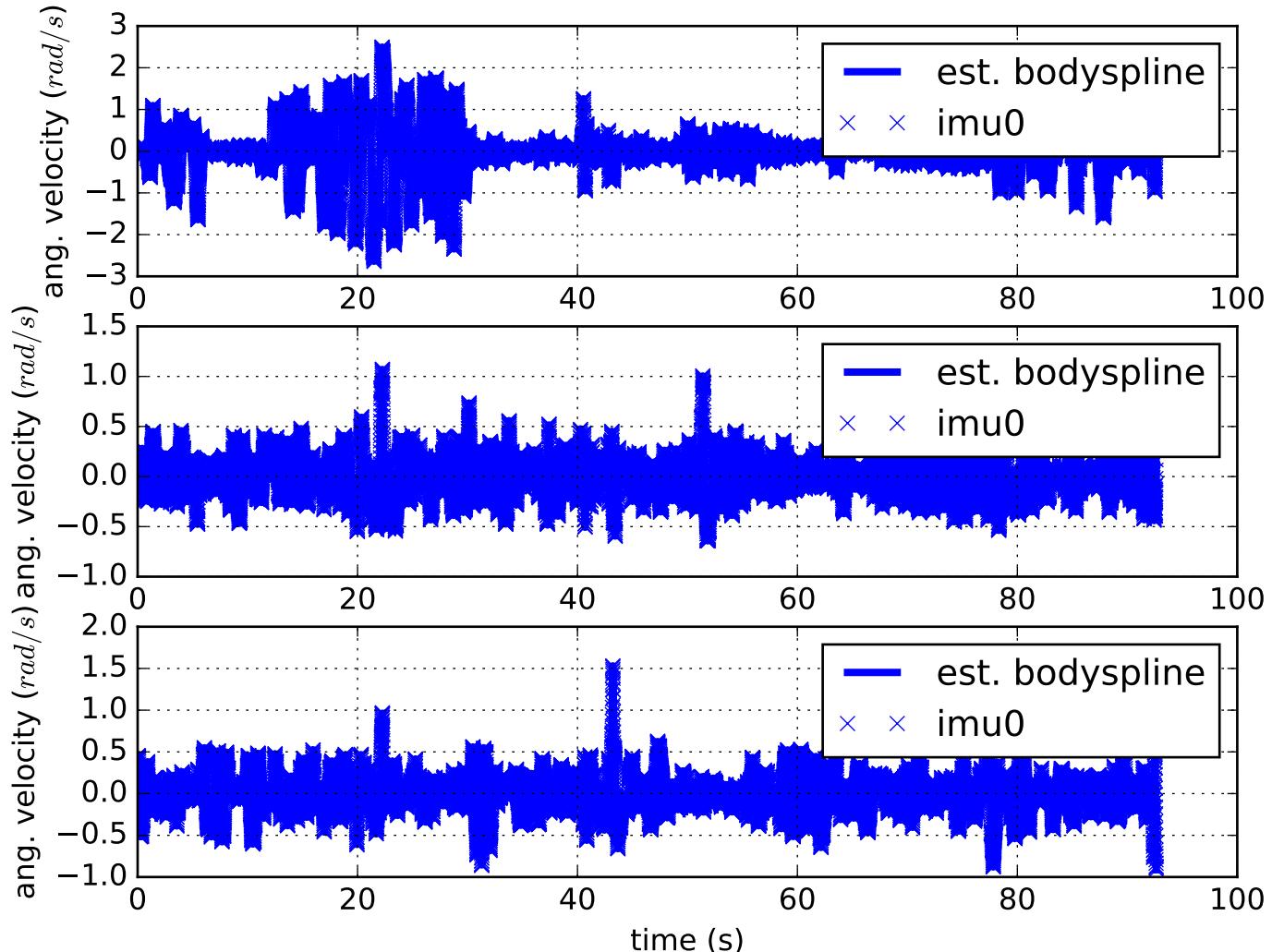
imu0: acceleration error



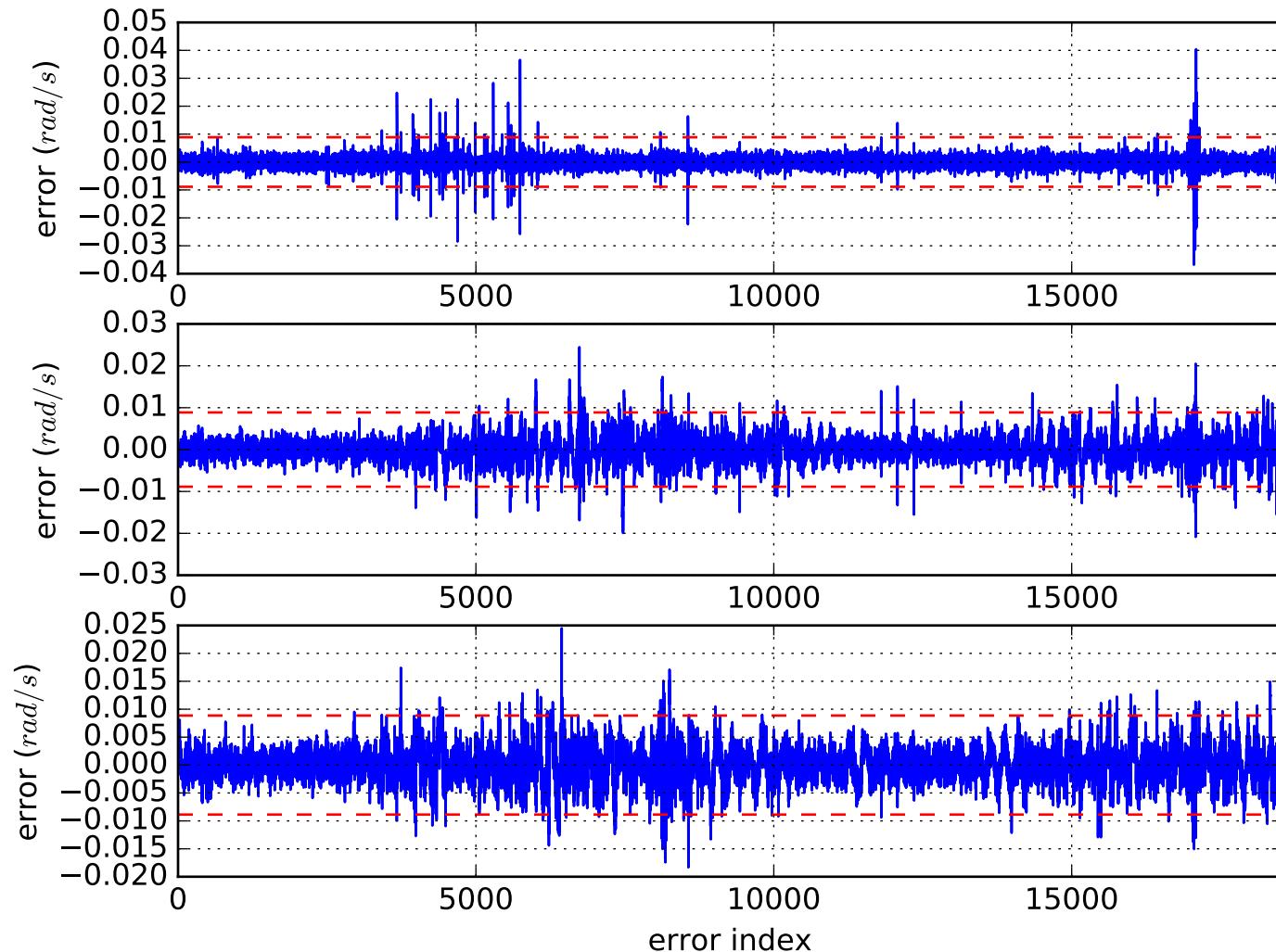
# imu0: estimated accelerometer bias (imu frame)



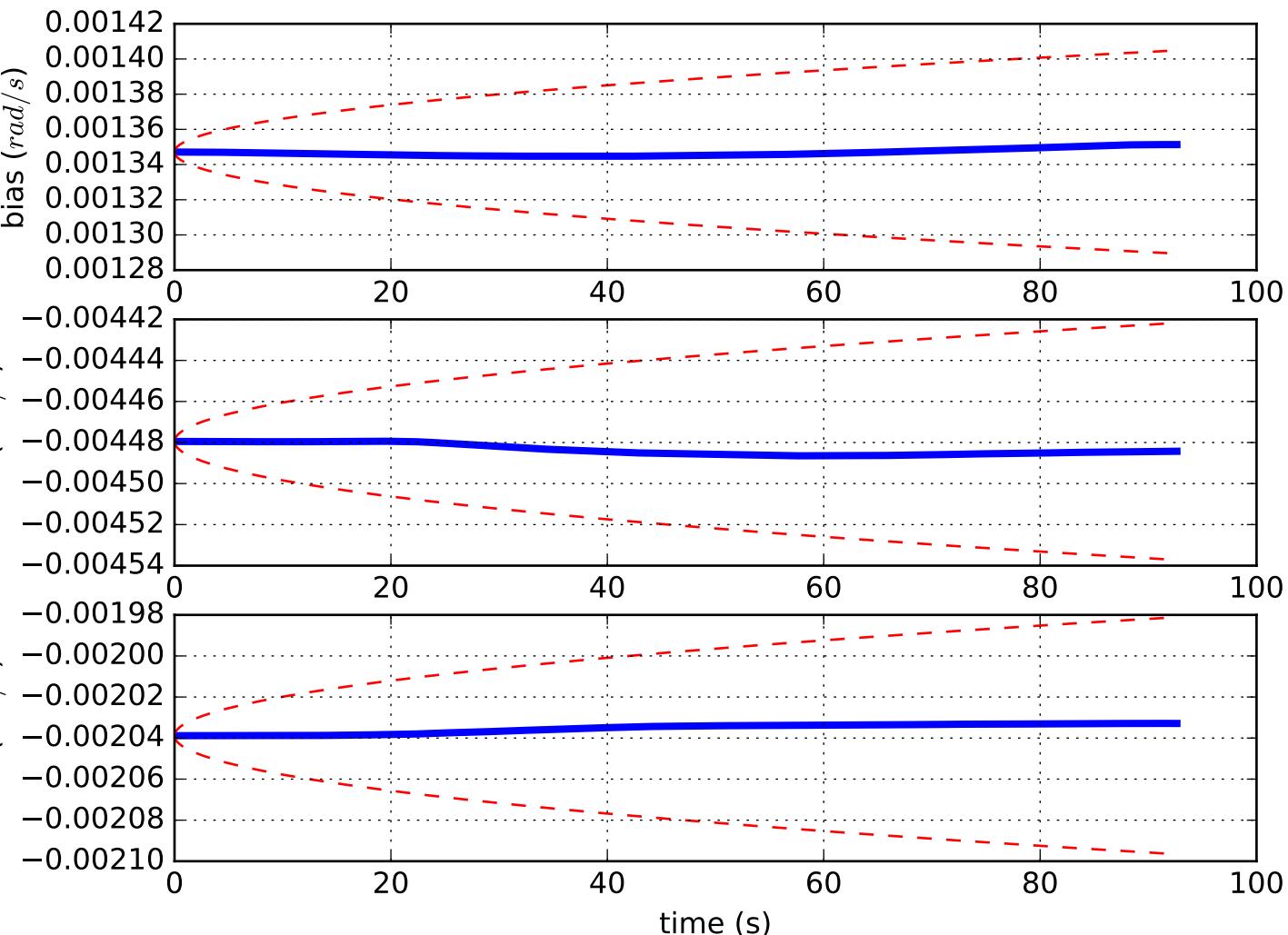
Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



# imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

