

Calibration results

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Normalized Residuals

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Reprojection error (cam0): mean 1.53198090017, median 1.03448939638, std: 1.71869616851

Gyroscope error (imu0): mean 40.0308705988, median 34.0038310791, std: 28.1685705818

Accelerometer error (imu0): mean 3.78405235468, median 2.80012928145, std: 3.86600234536

Residuals

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Reprojection error (cam0) [px]: mean 1.53198090017, median 1.03448939638, std: 1.71869616851

Gyroscope error (imu0) [rad/s]: mean 7.77131185414, median 6.60126476388, std: 5.46844830507

Accelerometer error (imu0) [m/s^2]: mean 0.0285006060683, median 0.0210899253263, std: 0.0291178344211

Transformation (cam0):

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T\_ci: (imu0 to cam0):

[ [ 0.99673392 0.0730142 0.03450236 -0.07802109]  
[ -0.07256844 0.99726515 -0.01400172 -0.01334264]  
[ -0.03543032 0.01145221 0.99930653 -0.13301945]  
[ 0. 0. 0. 1. ] ]

T\_ic: (cam0 to imu0):

[ [ 0.99673392 -0.07256844 -0.03543032 0.07208509]  
[ 0.0730142 0.99726515 0.01145221 0.02052616]  
[ 0.03450236 -0.01400172 0.99930653 0.13543229]  
[ 0. 0. 0. 1. ] ]

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

0.0304457583833

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

[ 0.02724885 -9.77077507 -0.83644179]

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:

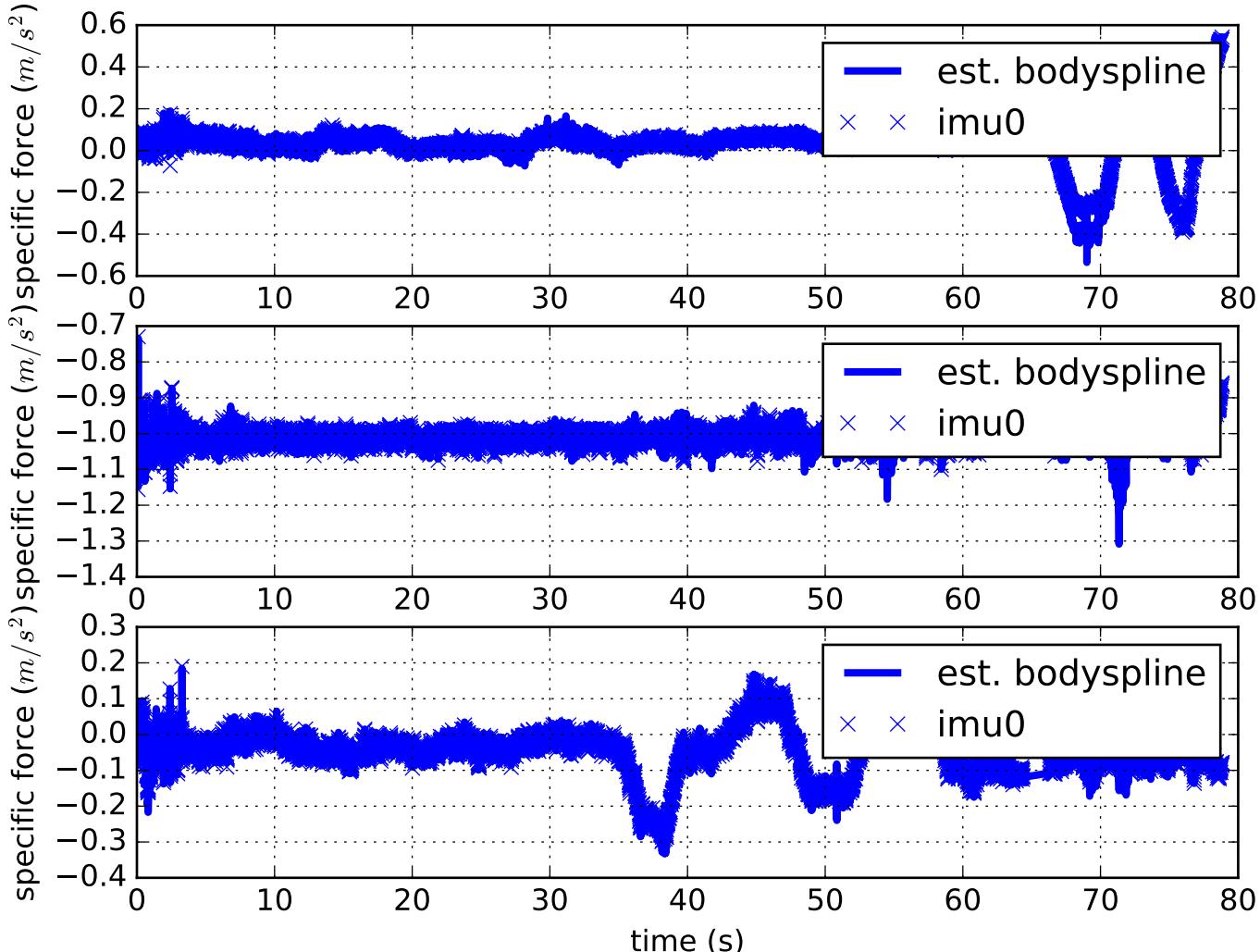
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  Model: calibrated  
  Update rate: 100.0  
  Accelerometer:  
    Noise density: 0.000753176843155  
    Noise density (discrete): 0.00753176843155  
    Random walk: 0.000495131527336  
  Gyroscope:  
    Noise density: 0.0194132971327  
    Noise density (discrete): 0.194132971327  
    Random walk: 0.00263736983585

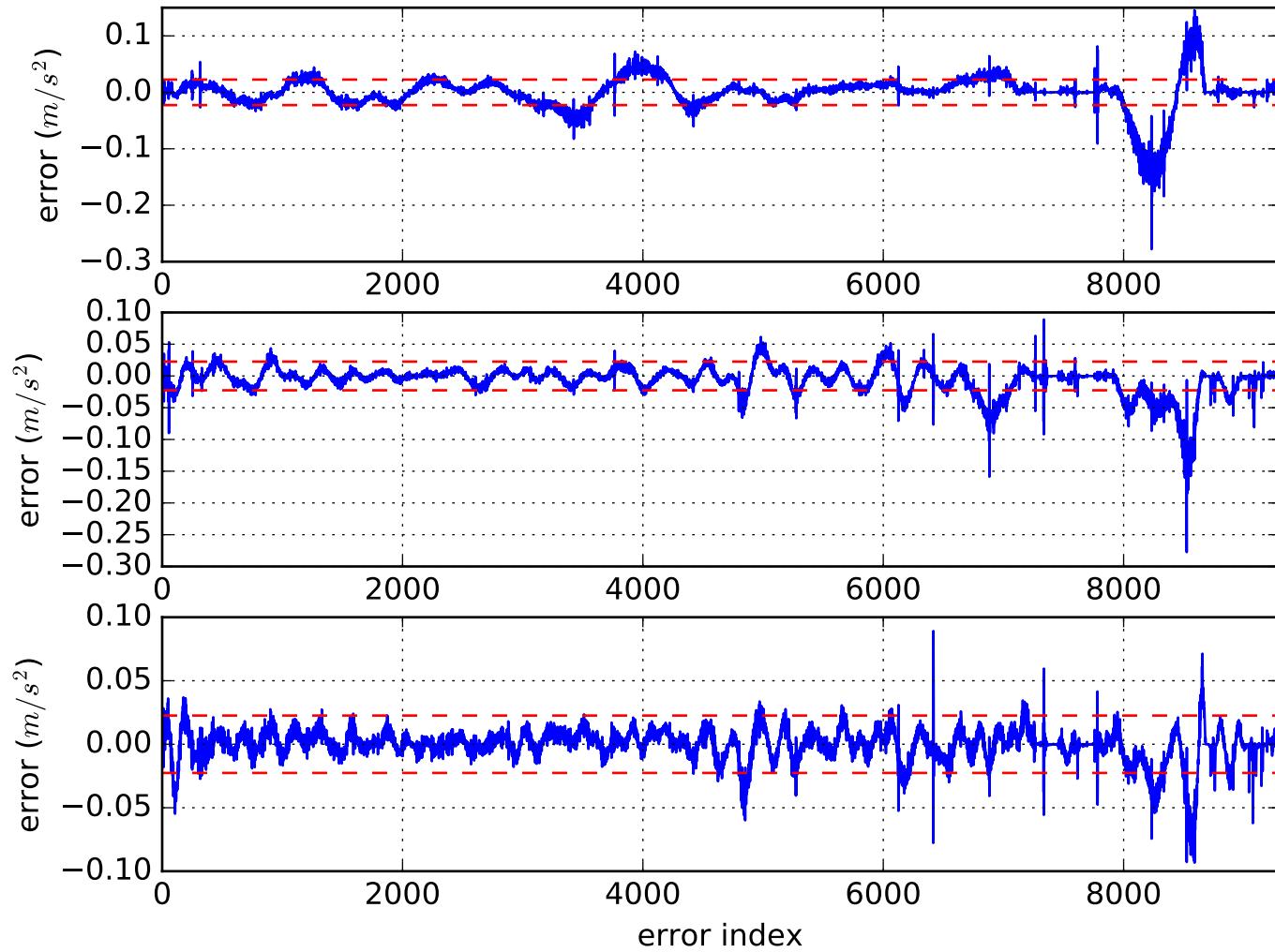
T\_i\_b  
[[ 1. 0. 0. 0.]  
 [ 0. 1. 0. 0.]  
 [ 0. 0. 1. 0.]  
 [ 0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

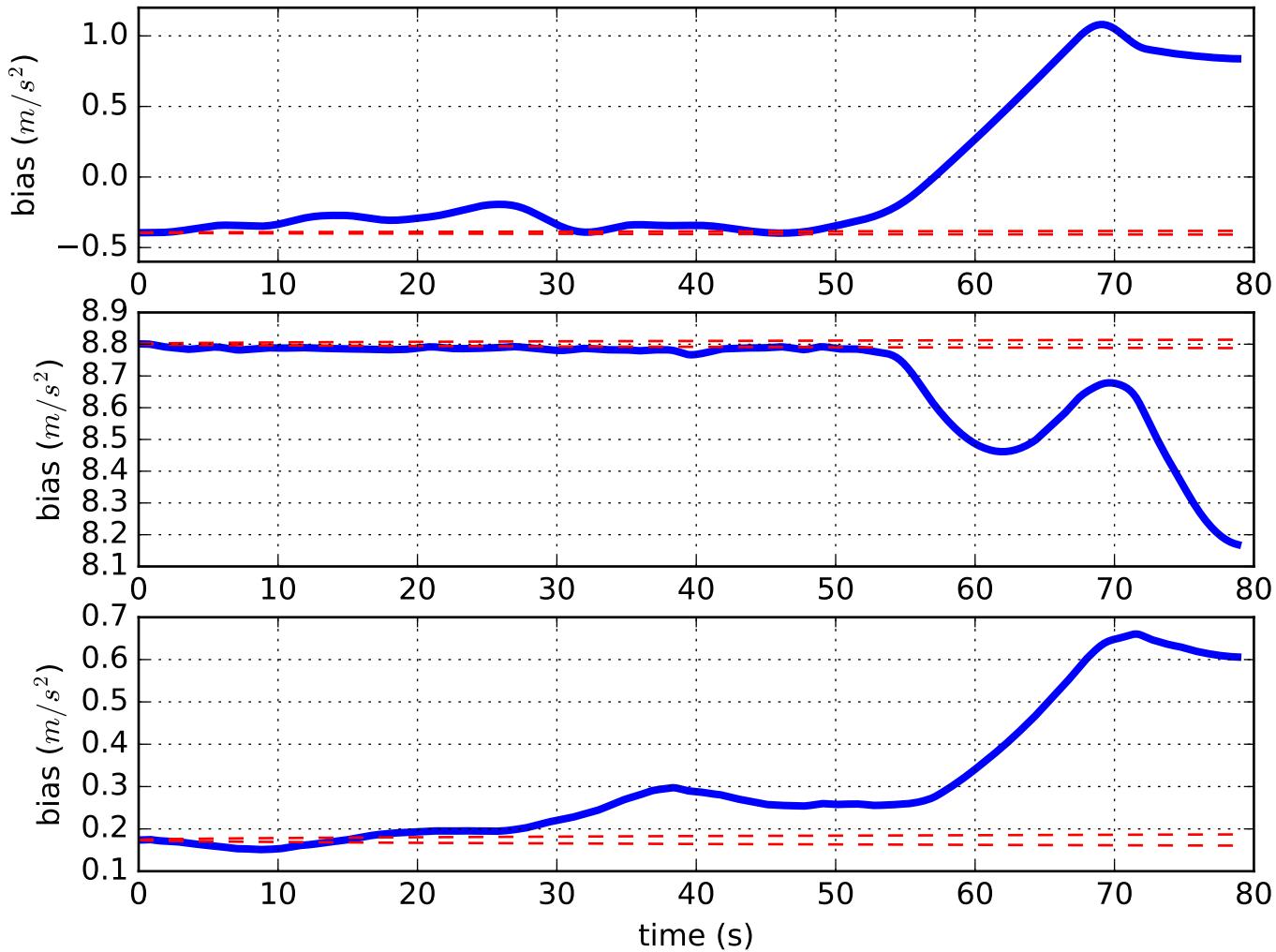
Comparison of predicted and measured specific force (imu0 frame)



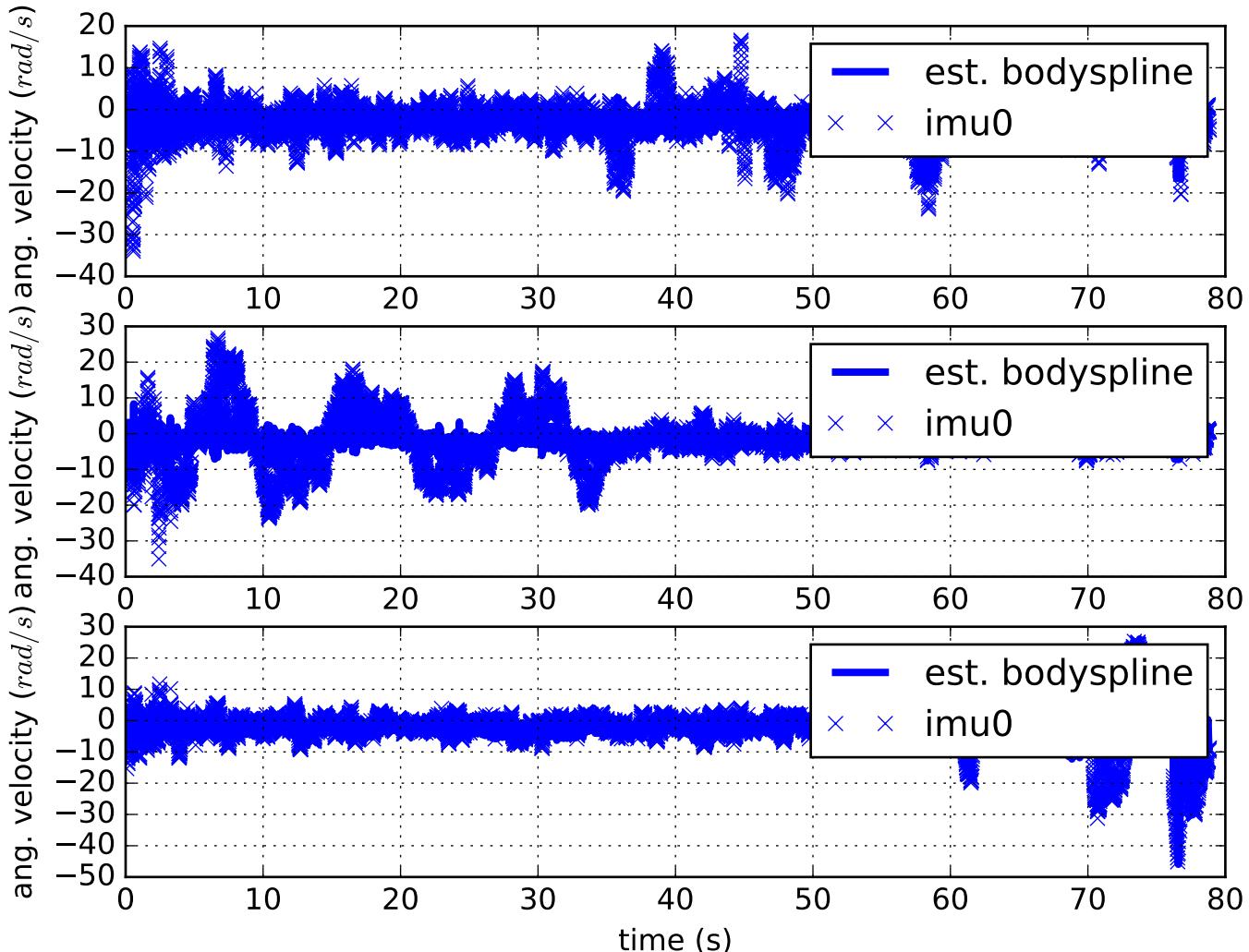
imu0: acceleration error



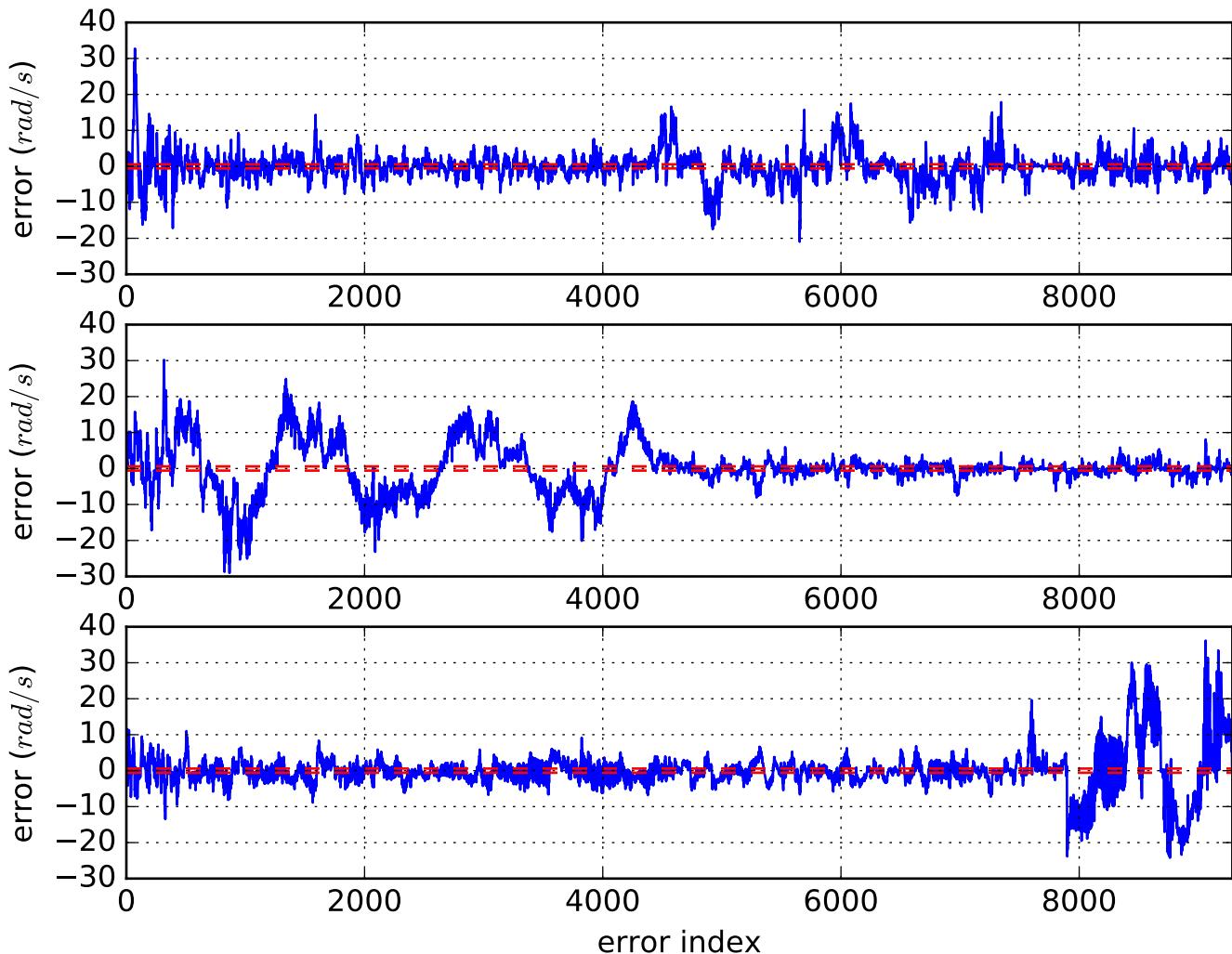
# imu0: estimated accelerometer bias (imu frame)



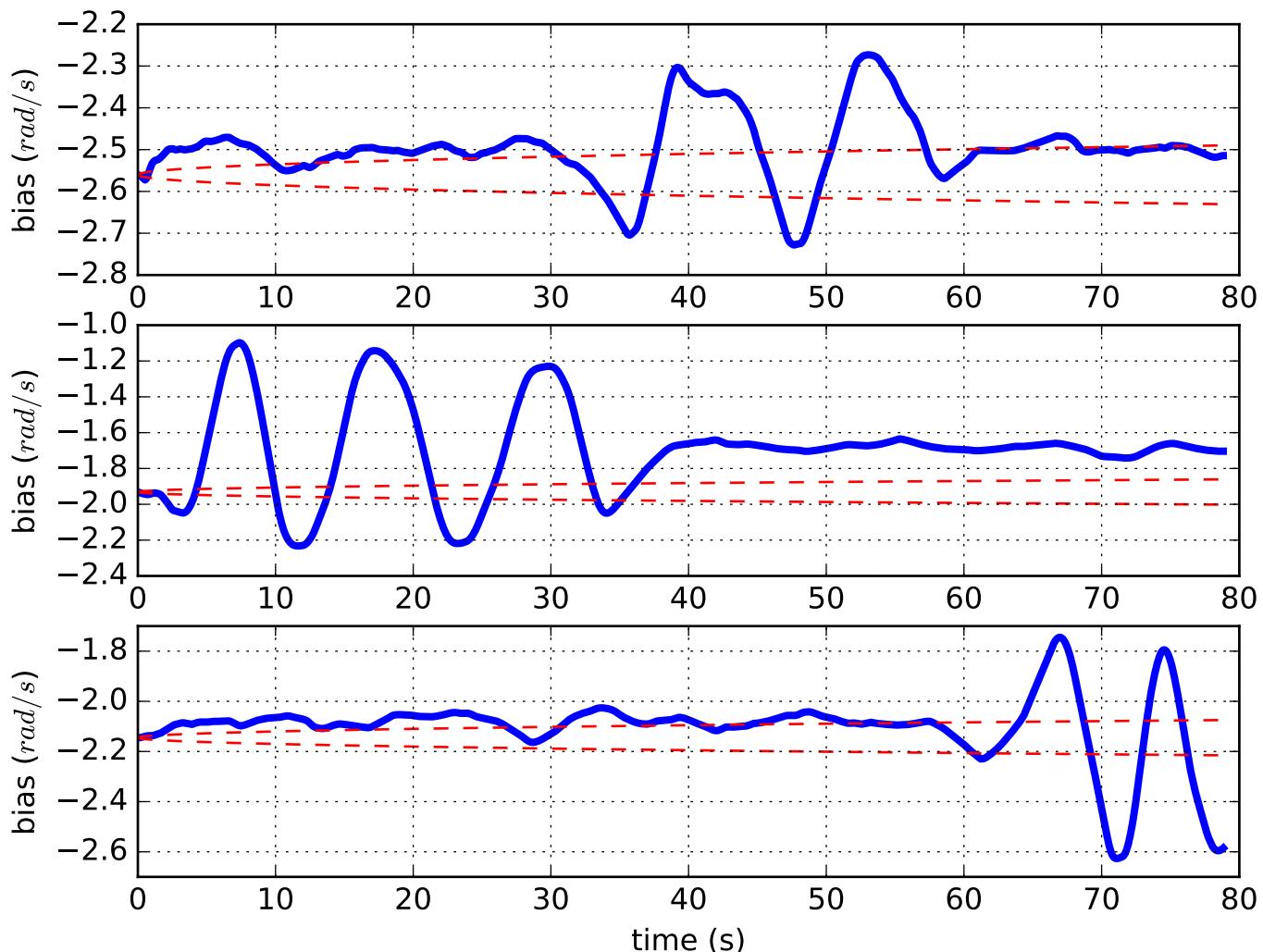
Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



# imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

