

Calibration results

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Normalized Residuals

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Reprojection error (cam0): mean 6.40558179912, median 6.48411572093, std: 1.52882891024

Gyroscope error (imu0): mean 0.981350968719, median 0.774726122502, std: 0.823971801493

Accelerometer error (imu0): mean 0.843402295446, median 0.646730297513, std: 0.679306708909

Residuals

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Reprojection error (cam0) [px]: mean 6.40558179912, median 6.48411572093, std: 1.52882891024

Gyroscope error (imu0) [rad/s]: mean 0.0312370373145, median 0.0246600345529, std: 0.0262275564297

Accelerometer error (imu0) [m/s^2]: mean 0.210522707898, median 0.161431163097, std: 0.169562602124

Transformation (cam0):

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T\_ci: (imu0 to cam0):

[ [ 0.01318077 0.99770823 -0.06636687 -0.0476337 ]  
[ -0.22176517 0.06763652 0.97275152 0.11836143 ]  
[ 0.97501101 0.00189624 0.22214843 -0.18920514 ]  
[ 0. 0. 0. 1. ] ]

T\_ic: (cam0 to imu0):

[ [ 0.01318077 -0.22176517 0.97501101 0.21135339 ]  
[ 0.99770823 0.06763652 0.00189624 0.03987776 ]  
[ -0.06636687 0.97275152 0.22214843 -0.07626593 ]  
[ 0. 0. 0. 1. ] ]

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

-0.121815892709

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

[ 0.19739721 9.80131215 0.25246246 ]

Calibration configuration

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cam0

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Camera model: pinhole  
Focal length: [539.403503, 529.838562]  
Principal point: [429.275072, 238.941372]  
Distortion model: radtan  
Distortion coefficients: [0.004974, -0.00013, -0.001212, 0.002192]  
Type: aprilgrid  
Tags:  
  Rows: 6  
  Cols: 6  
  Size: 0.034 [m]  
  Spacing 0.00102 [m]

## IMU configuration

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### IMU0:

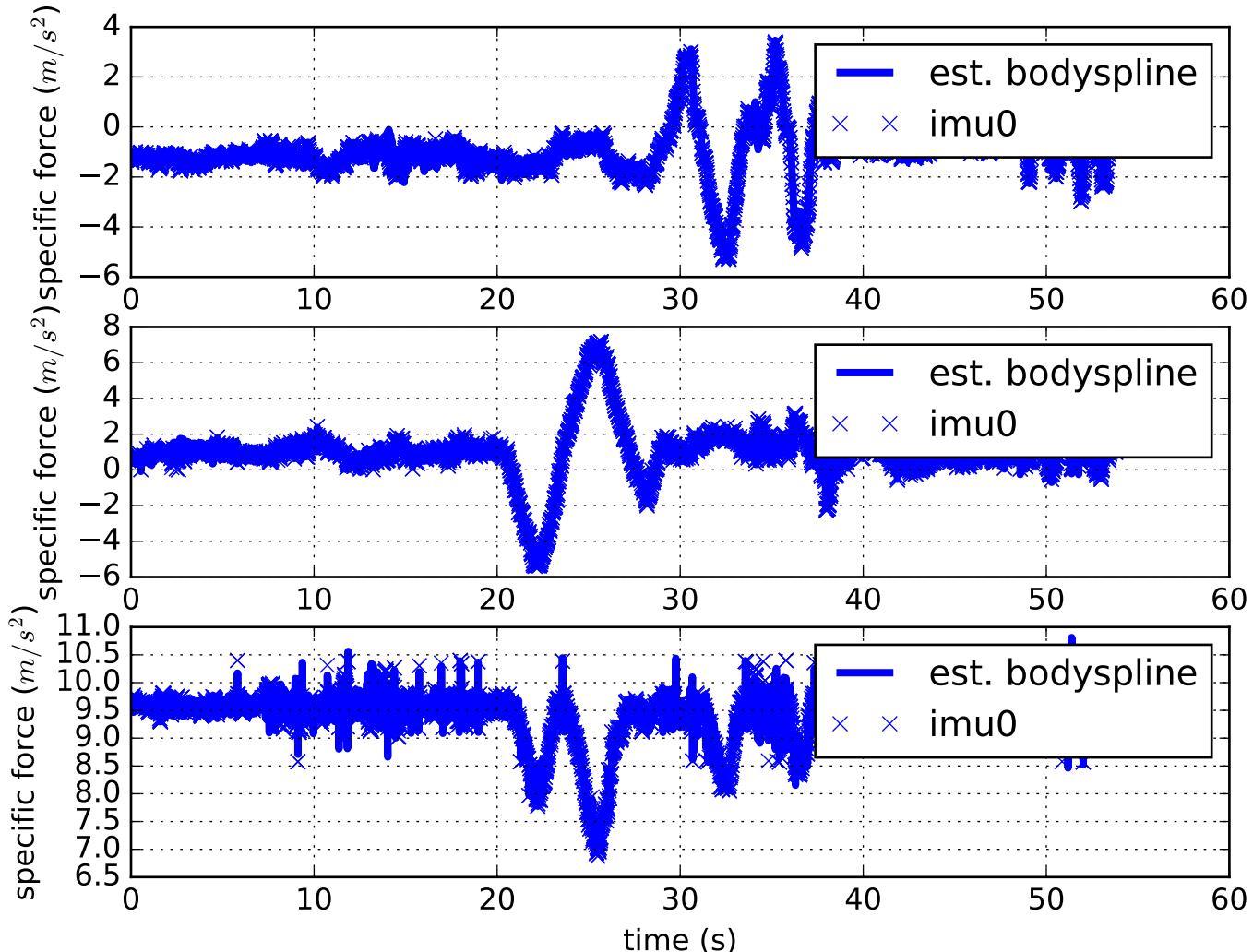
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  Model: calibrated  
  Update rate: 160.0  
  Accelerometer:  
    Noise density: 0.0197335026161  
    Noise density (discrete): 0.249611257919  
    Random walk: 0.00130379197326  
  Gyroscope:  
    Noise density: 0.0025164336822  
    Noise density (discrete): 0.031830648066  
    Random walk: 8.83855712176e-05

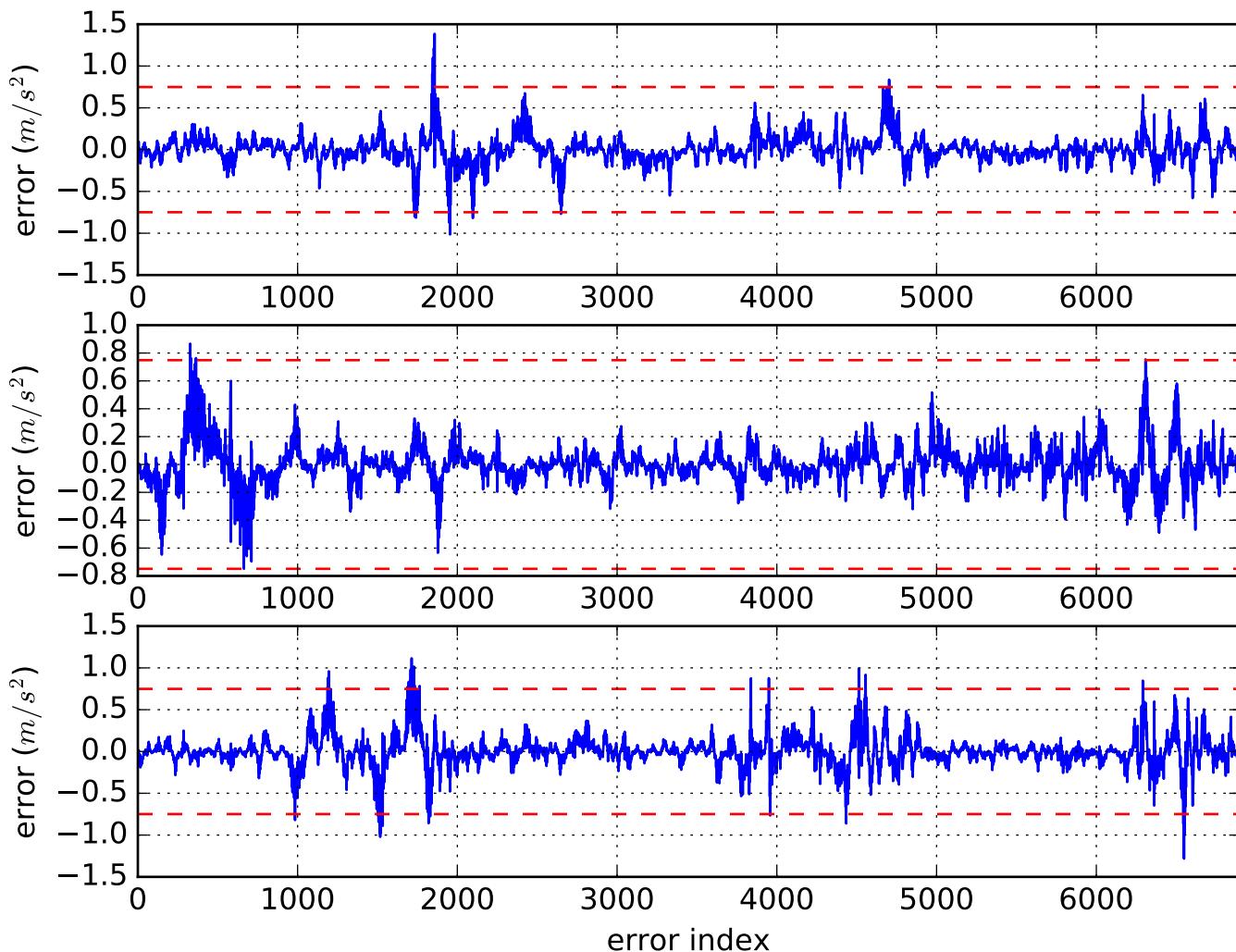
  T\_i\_b  
  [[ 1. 0. 0. 0.]  
   [ 0. 1. 0. 0.]  
   [ 0. 0. 1. 0.]  
   [ 0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

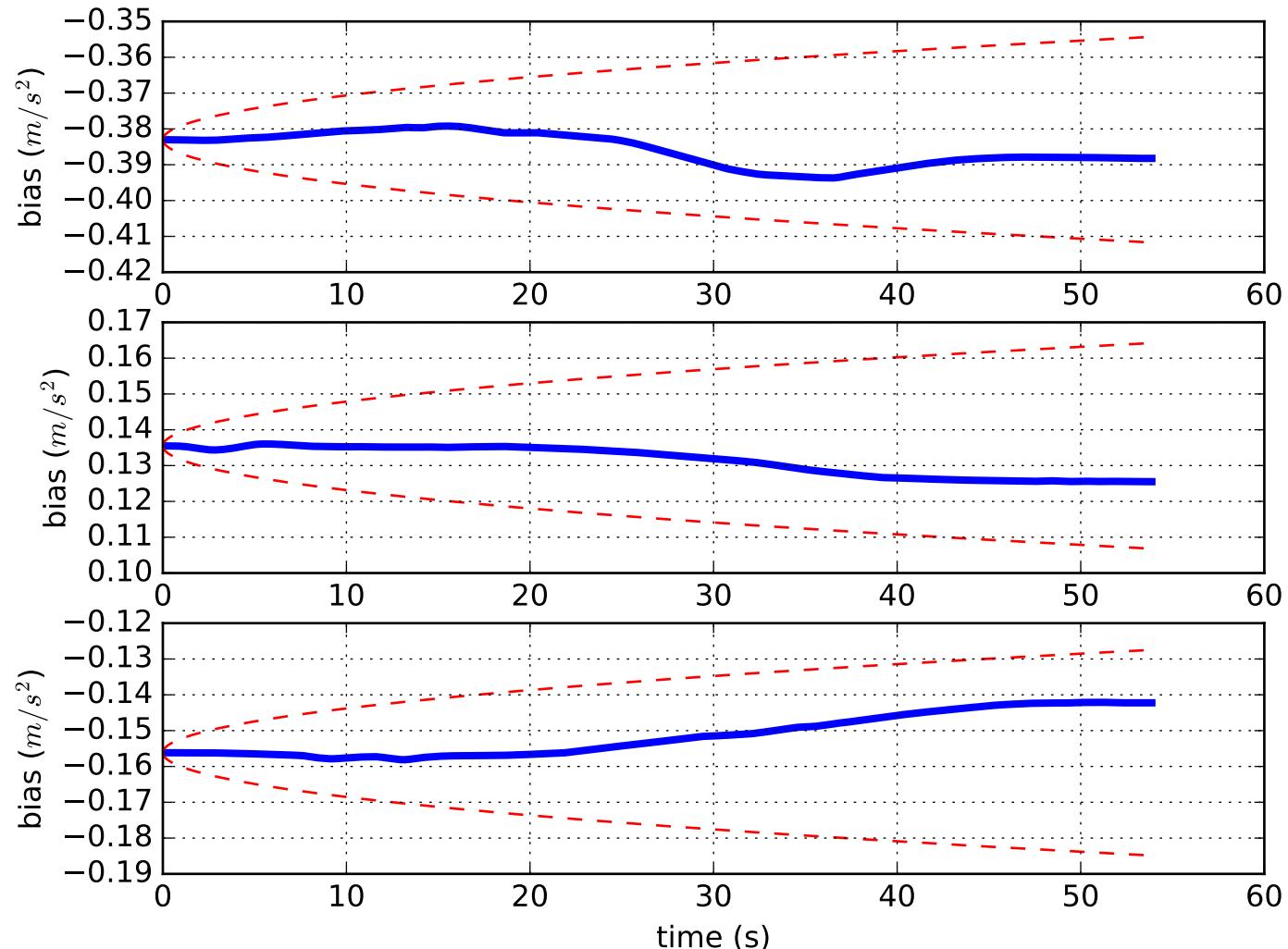
Comparison of predicted and measured specific force (imu0 frame)



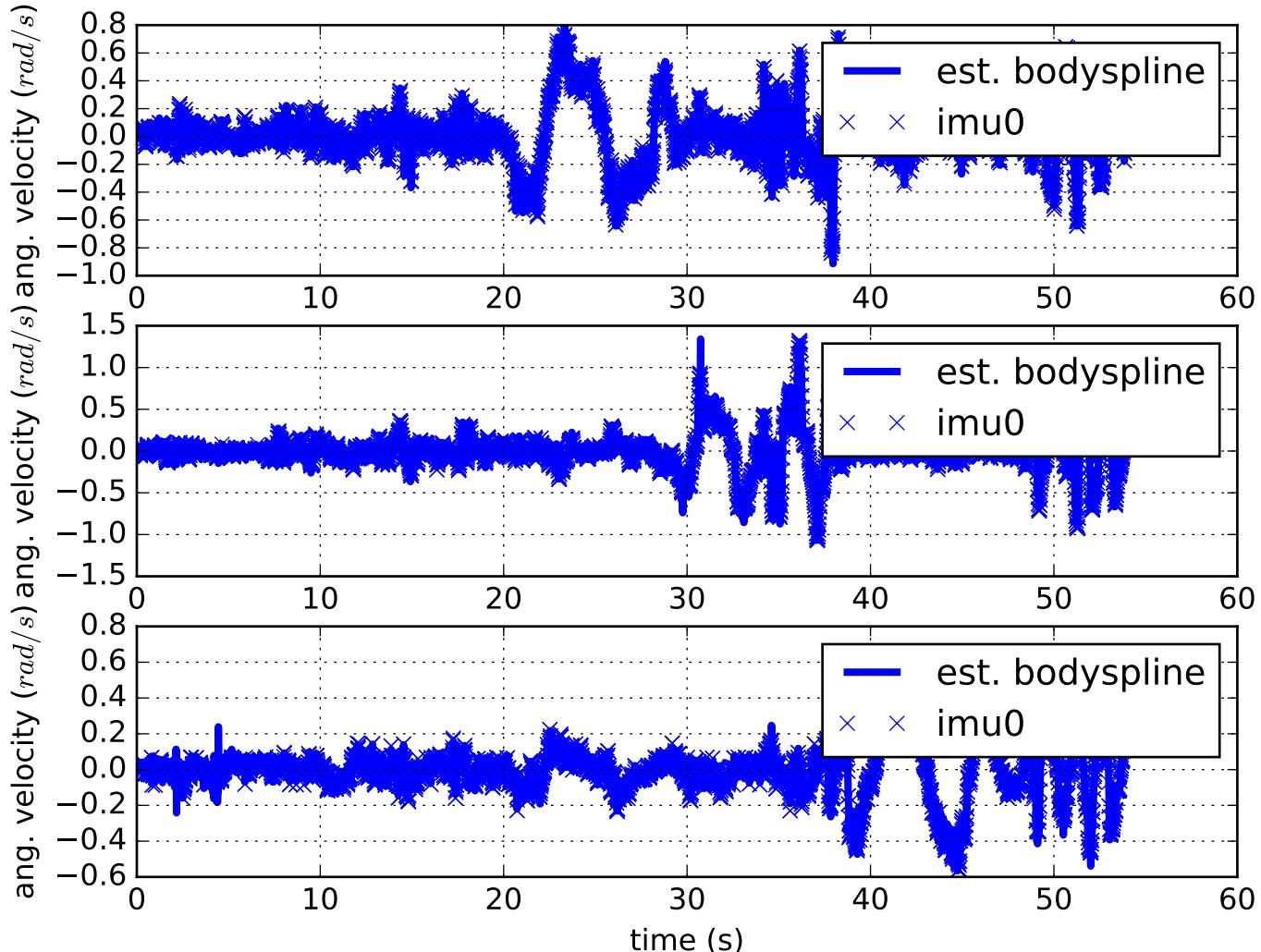
imu0: acceleration error



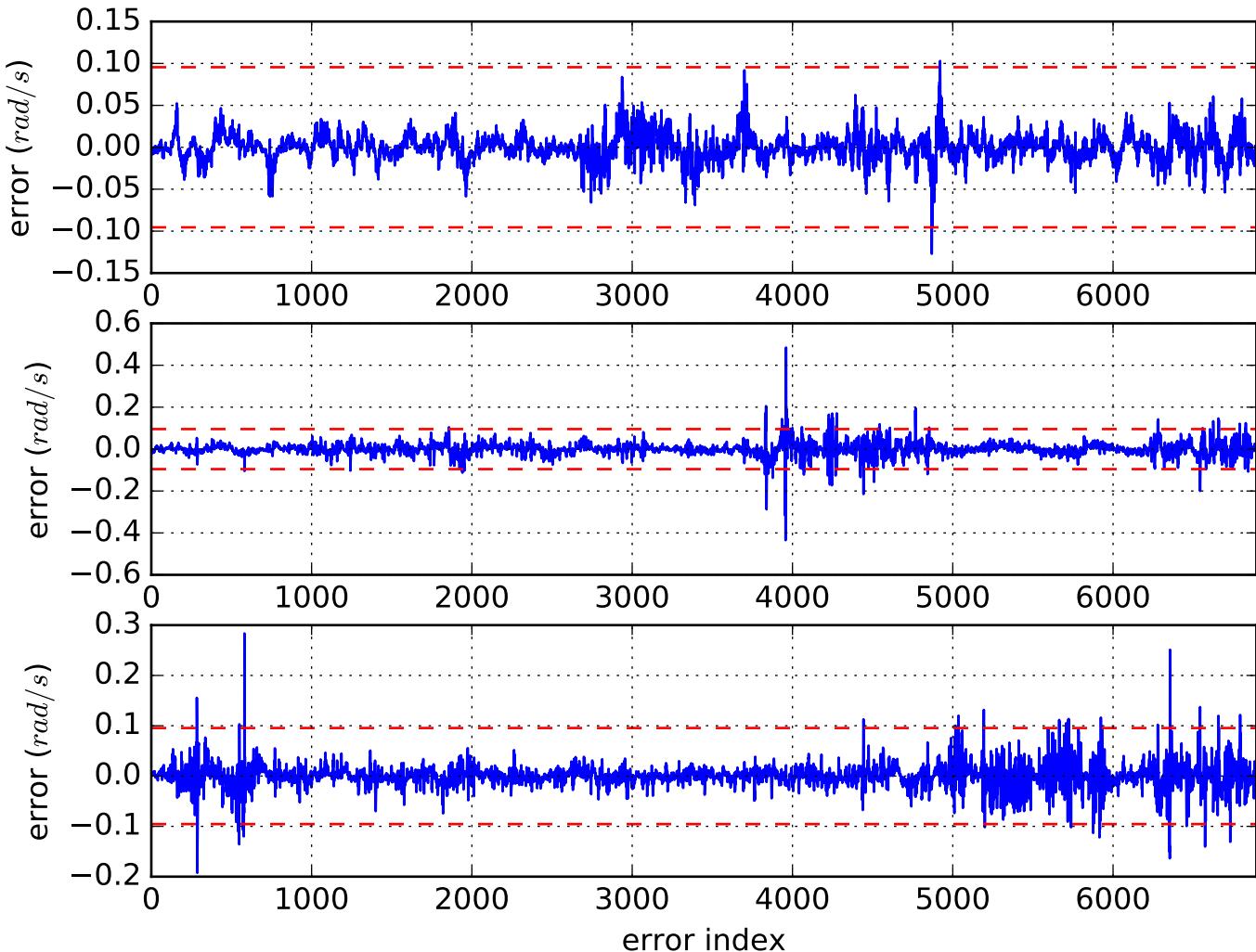
# imu0: estimated accelerometer bias (imu frame)



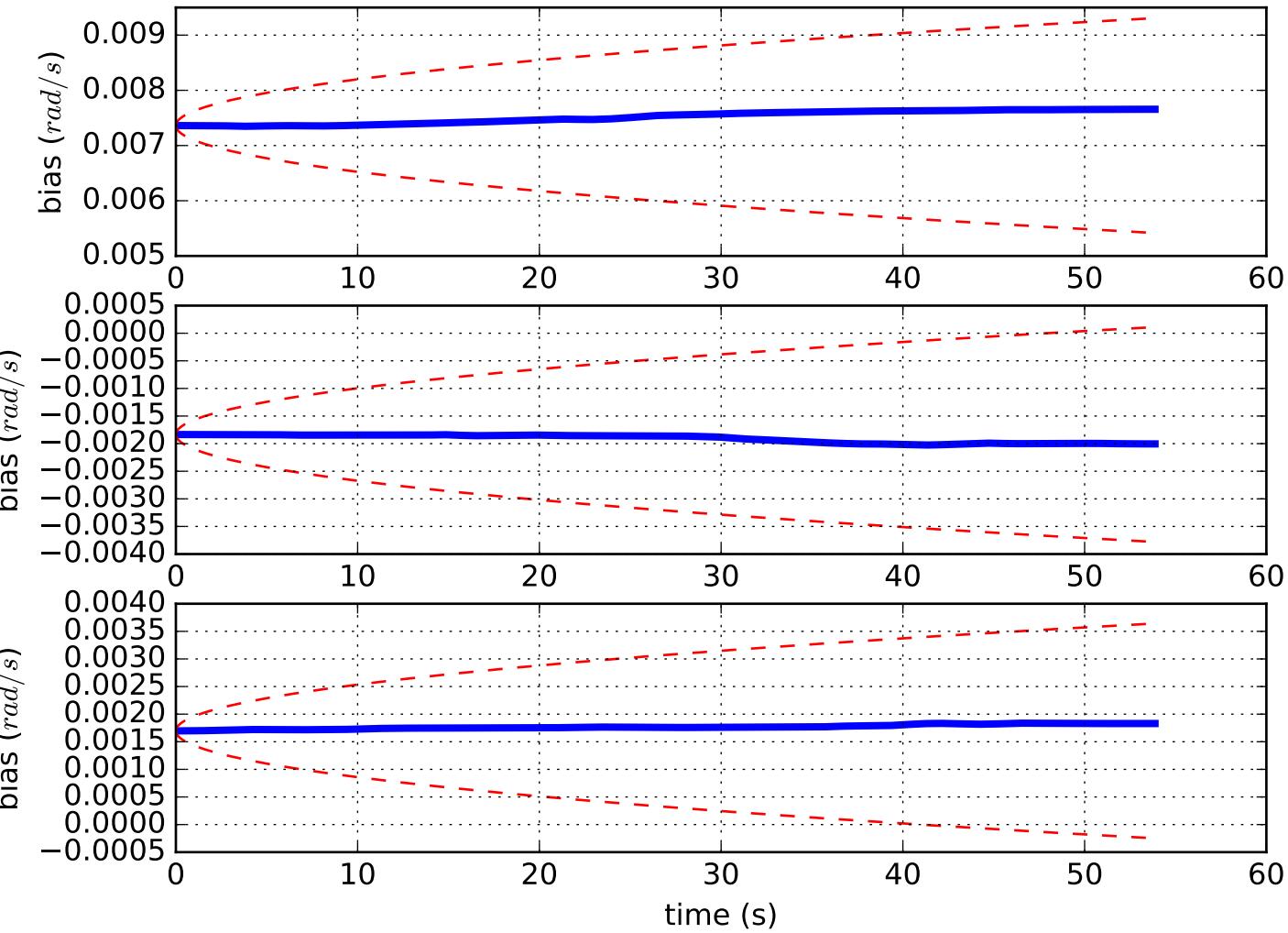
Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



# imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

