

Calibration results

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Normalized Residuals

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Reprojection error (cam0): mean 0.134209495182, median 0.128352600236, std: 0.0660739152214

Gyroscope error (imu0): mean 0.0801399999444, median 0.0704599923384, std: 0.0469288798372

Accelerometer error (imu0): mean 0.524630109966, median 0.48429912669, std: 0.317251706562

Residuals

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Reprojection error (cam0) [px]: mean 0.134209495182, median 0.128352600236, std: 0.0660739152214

Gyroscope error (imu0) [rad/s]: mean 0.00801399999444, median 0.00704599923384, std: 0.00469288798372

Accelerometer error (imu0) [m/s^2]: mean 0.104926021993, median 0.096859825338, std: 0.0634503413123

Transformation (cam0):

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T\_ci: (imu0 to cam0):

[[-0.01526873 0.99987504 -0.0040963 0.0083388 ]  
[ 0.47101085 0.01080627 0.88206122 -0.21768694]  
[ 0.88199526 0.01153855 -0.47111699 -0.33767971]  
[ 0. 0. 0. 1. ]]

T\_ic: (cam0 to imu0):

[[-0.01526873 0.47101085 0.88199526 0.40049214]  
[ 0.99987504 0.01080627 0.01153855 -0.00208904]  
[ -0.0040963 0.88206122 -0.47111699 0.03296072]  
[ 0. 0. 0. 1. ]]

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

-0.00619681468287

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

[-0.03289506 -9.61288662 -1.93900791]

Calibration configuration

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cam0

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Camera model: pinhole  
Focal length: [695.8014423211335, 703.2550985209633]  
Principal point: [405.71108272944616, 248.97501513134145]  
Distortion model: equidistant  
Distortion coefficients: [0.4431184118668466, 1.228503777075885, -10.007688137460061, 19.32555855139353]  
Type: aprilgrid  
Tags:  
  Rows: 6  
  Cols: 6  
  Size: 0.083 [m]  
  Spacing 0.0249 [m]

## IMU configuration

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### IMU0:

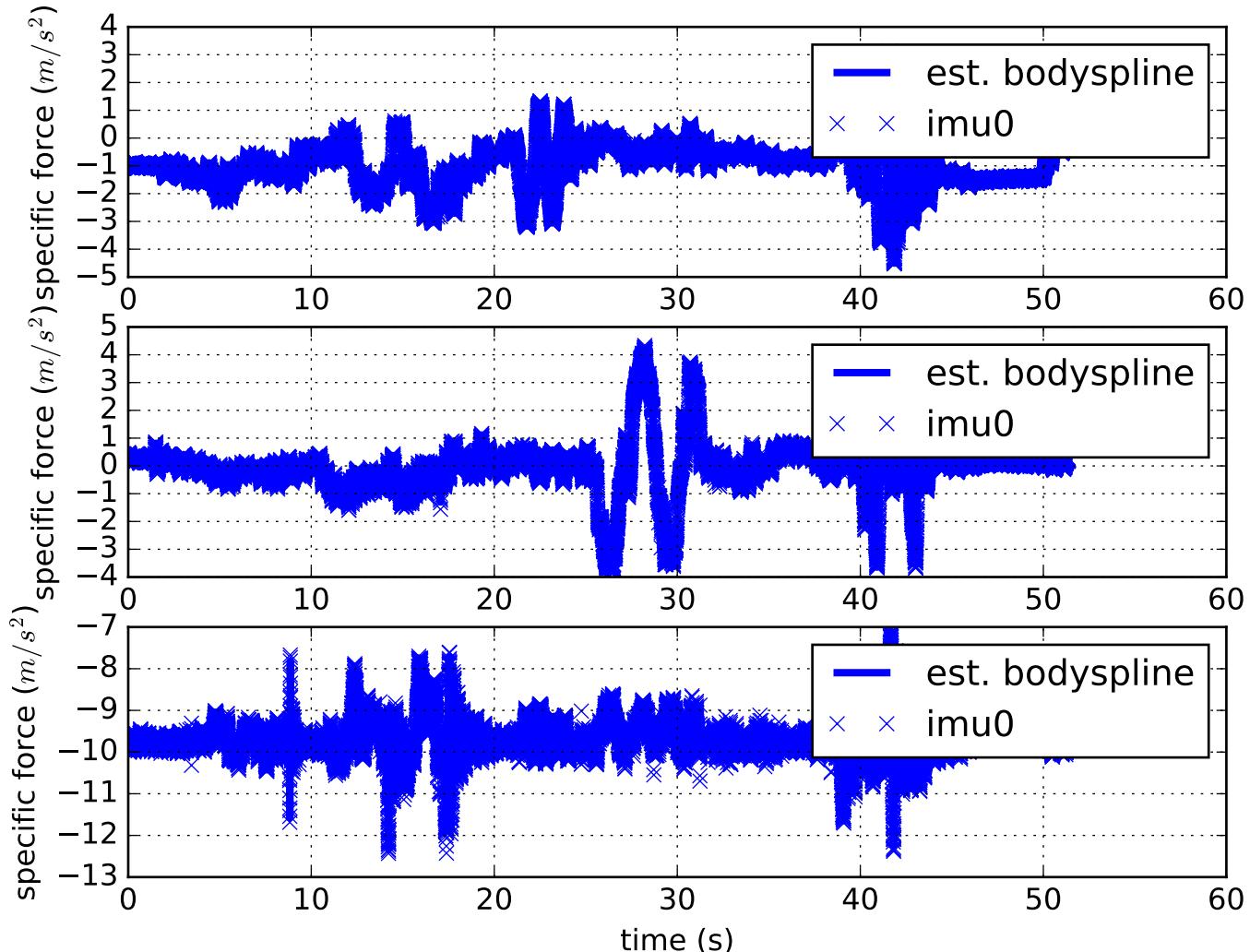
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  Model: calibrated  
  Update rate: 400.0  
  Accelerometer:  
    Noise density: 0.01  
    Noise density (discrete): 0.2  
    Random walk: 0.0002  
  Gyroscope:  
    Noise density: 0.005  
    Noise density (discrete): 0.1  
    Random walk: 4e-06

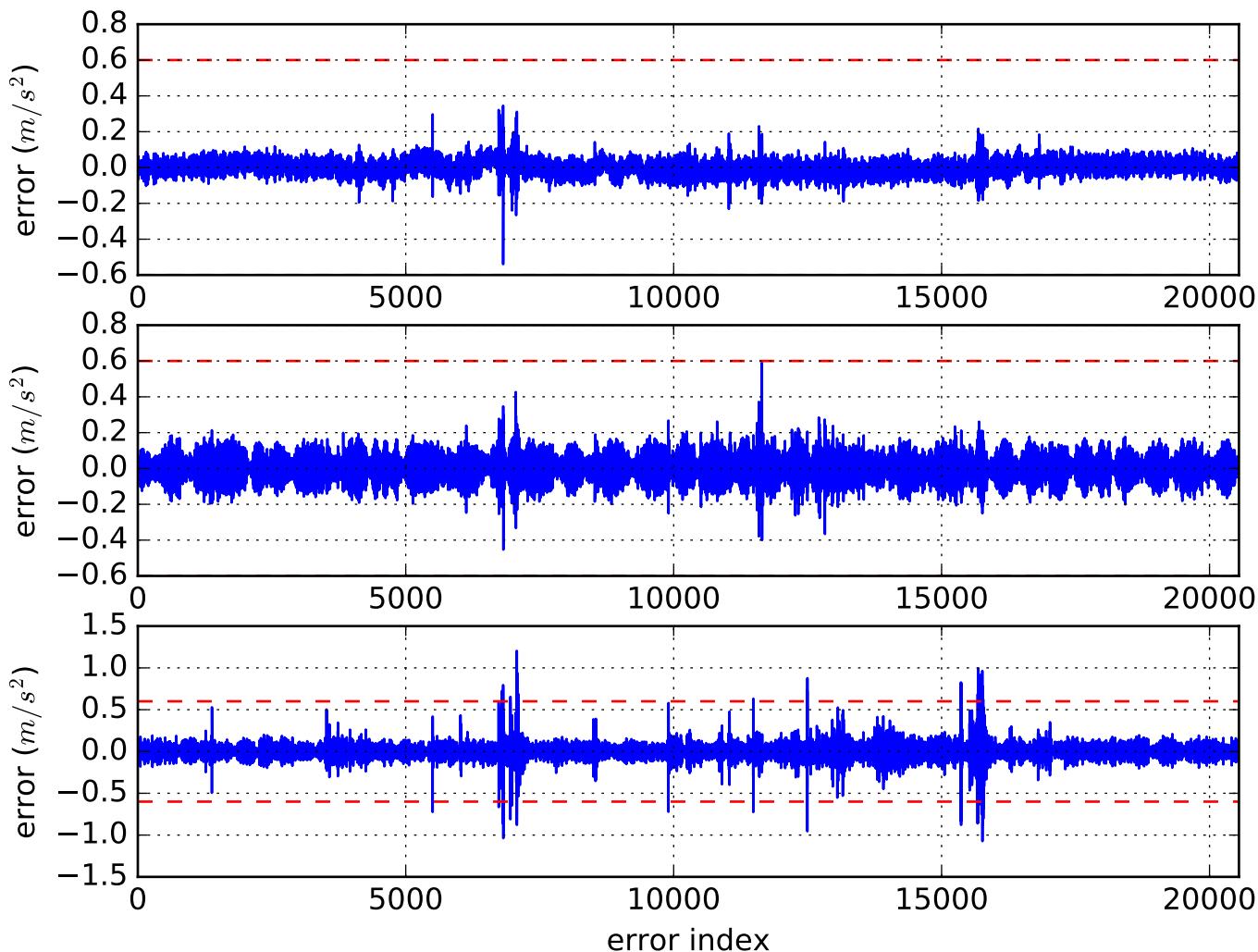
$T_{i,b}$   
  [[ 1. 0. 0. 0.]  
   [ 0. 1. 0. 0.]  
   [ 0. 0. 1. 0.]  
   [ 0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

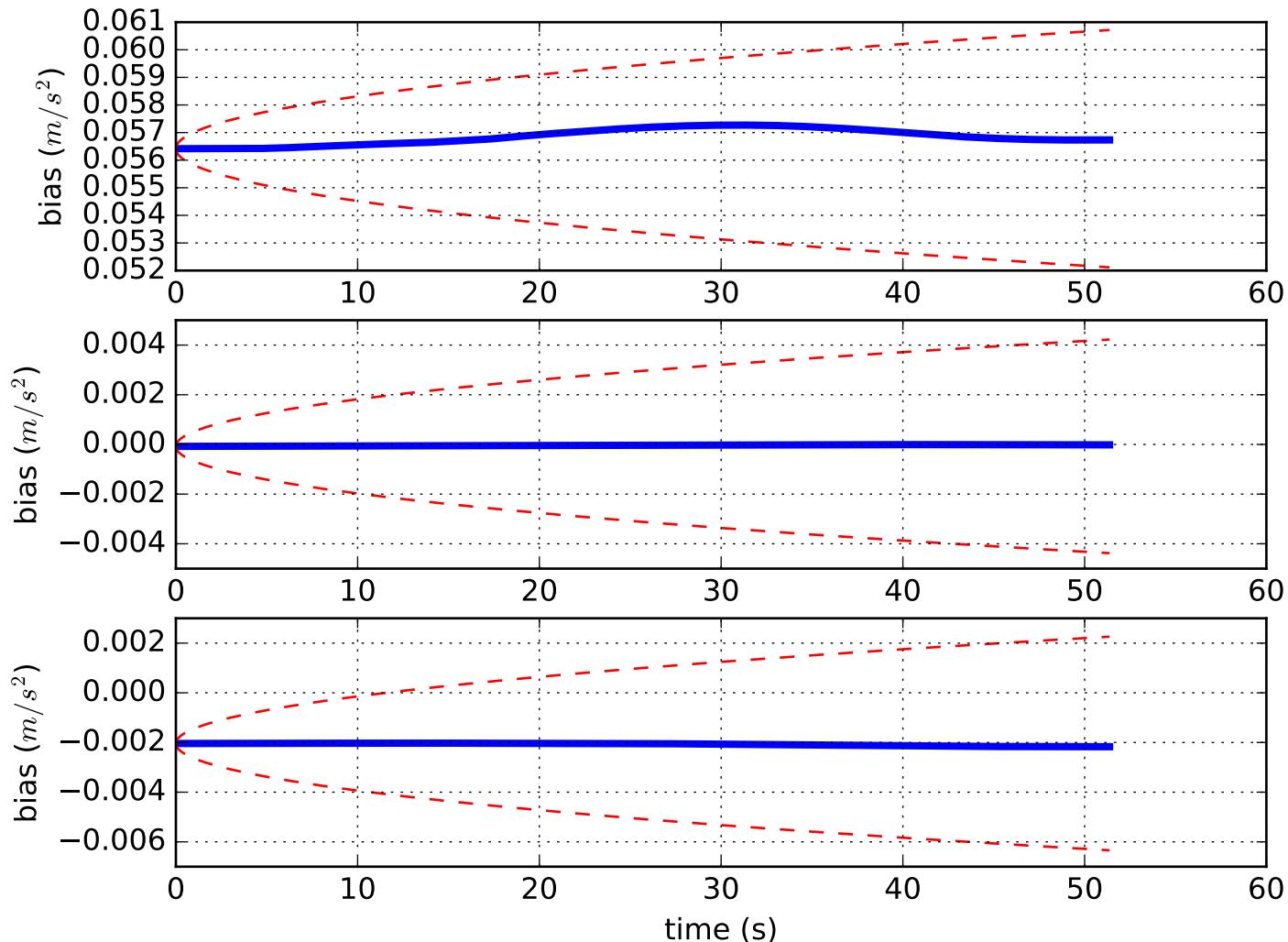
Comparison of predicted and measured specific force (imu0 frame)



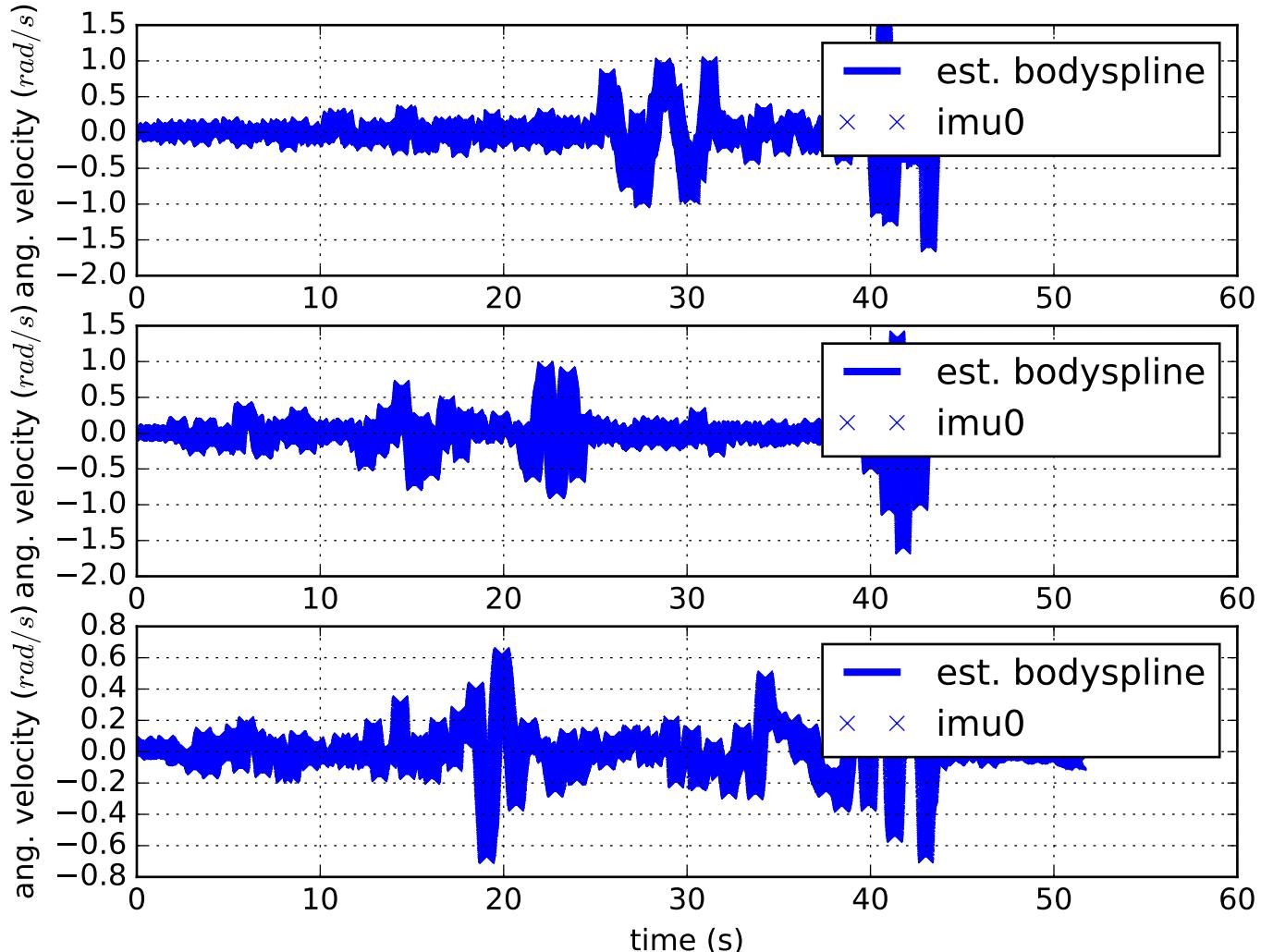
# imu0: acceleration error



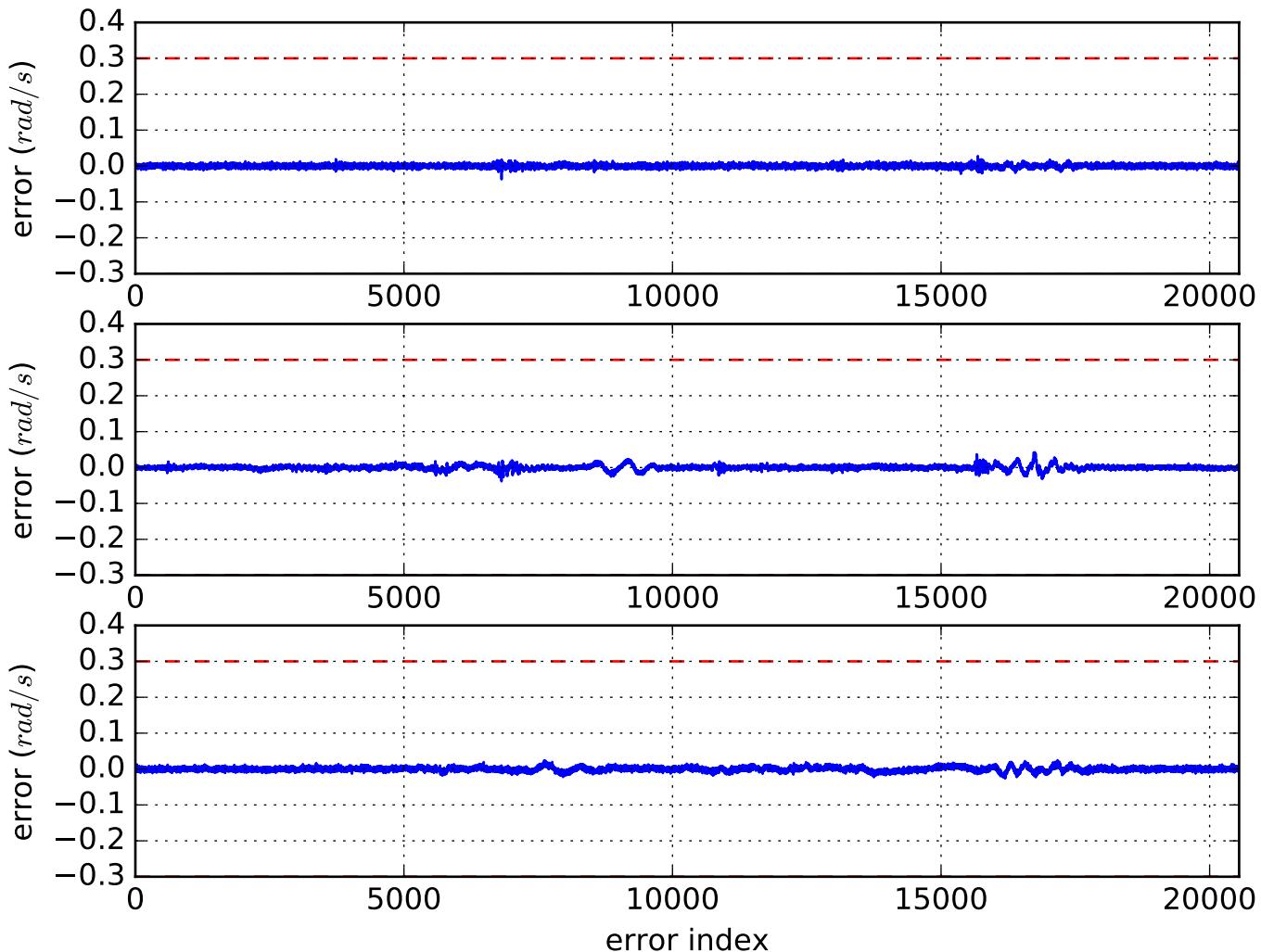
# imu0: estimated accelerometer bias (imu frame)



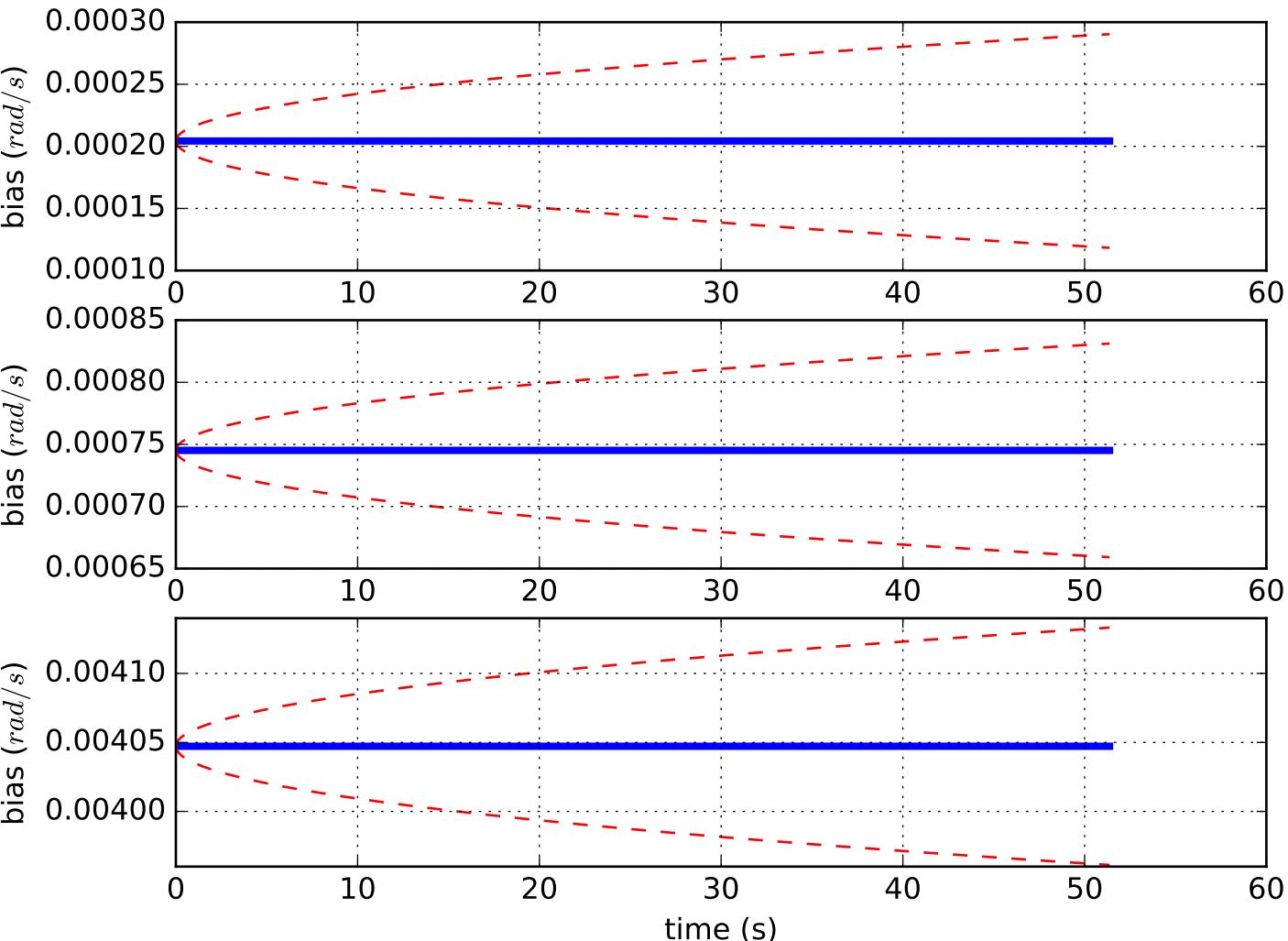
Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



# imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

