

Calibration results

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Normalized Residuals

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Reprojection error (cam0): mean 2.1988773209, median 1.35347460597, std: 2.81632833469

Gyroscope error (imu0): mean 49.554637343, median 40.2789088033, std: 37.8388465347

Accelerometer error (imu0): mean 132.352049392, median 160.381384089, std: 89.4941729755

Residuals

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Reprojection error (cam0) [px]: mean 2.1988773209, median 1.35347460597, std: 2.81632833469

Gyroscope error (imu0) [rad/s]: mean 9.30967522319, median 7.567073021, std: 7.10866612987

Accelerometer error (imu0) [m/s^2]: mean 5.71048031454, median 6.91983796902, std: 3.86132829367

Transformation (cam0):

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T\_ci: (imu0 to cam0):

[[-0.99913126 0.03971904 -0.01261404 0.0002712 ]  
[-0.04149242 -0.9763348 0.21224689 -0.00091964]  
[-0.00388528 0.21258589 0.97713466 -0.00992425]  
[ 0. 0. 0. 1. ]]

T\_ic: (cam0 to imu0):

[[-0.99913126 -0.04149242 -0.00388528 0.00019425]  
[ 0.03971904 -0.9763348 0.21258589 0.00120111]  
[-0.01261404 0.21224689 0.97713466 0.00989594]  
[ 0. 0. 0. 1. ]]

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

-0.0204287574461

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

[ 0.13661038 -9.77893679 -0.72260352]

Calibration configuration

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cam0

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Camera model: pinhole  
Focal length: [647.5037713837596, 860.2835166759764]  
Principal point: [300.2422691674086, 231.85601047756396]  
Distortion model: radtan  
Distortion coefficients: [0.16886766443276924, -0.27983955532486726, 0.0023200396979456417, -0.003111586927134966]  
Type: aprilgrid  
Tags:  
  Rows: 6  
  Cols: 6  
  Size: 0.02 [m]  
  Spacing 0.006 [m]

## IMU configuration

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### IMU0:

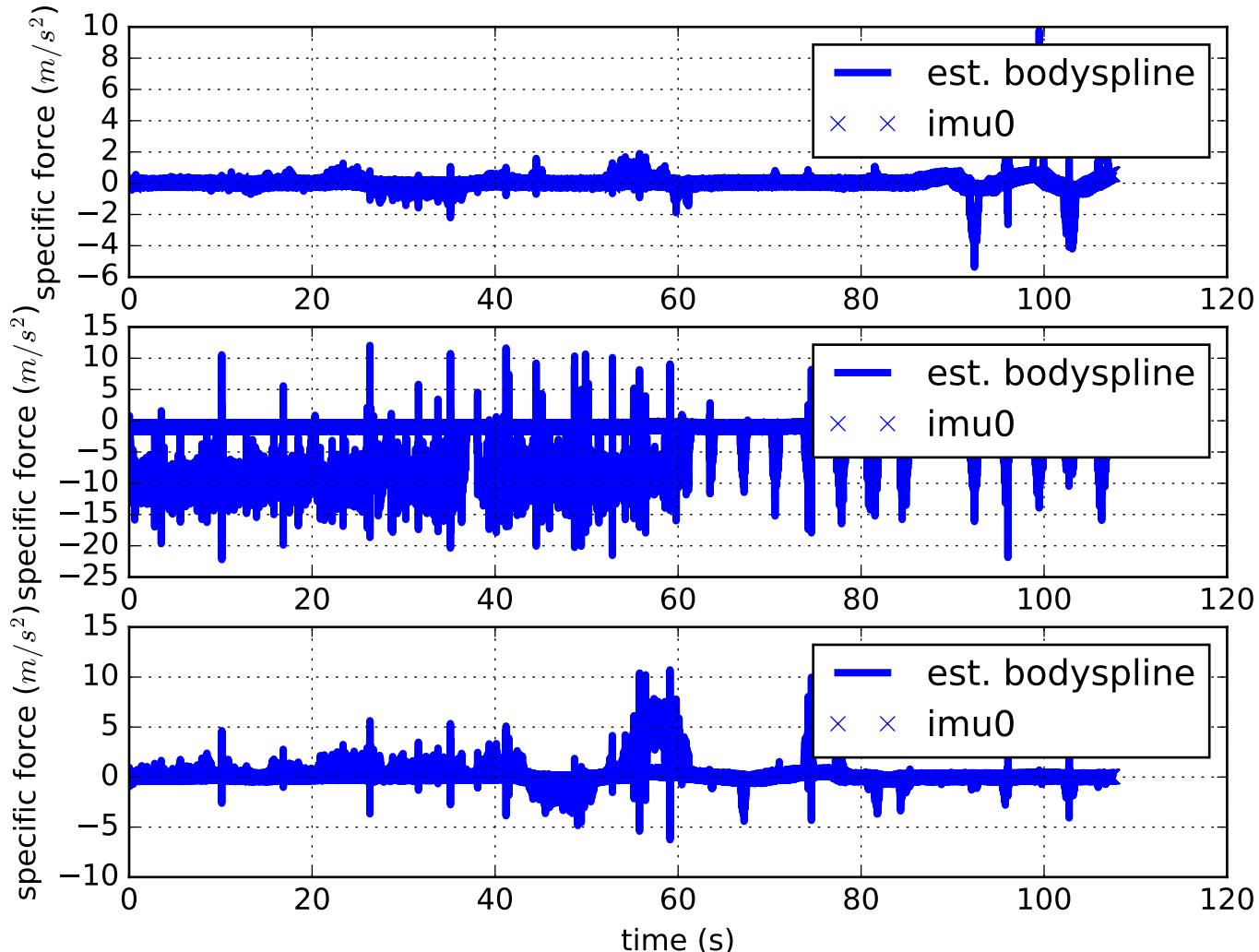
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  Model: calibrated  
  Update rate: 100.0  
  Accelerometer:  
    Noise density: 0.0043146141981  
    Noise density (discrete): 0.043146141981  
    Random walk: 0.00612122072734  
  Gyroscope:  
    Noise density: 0.0187866882342  
    Noise density (discrete): 0.187866882342  
    Random walk: 0.00214450075787

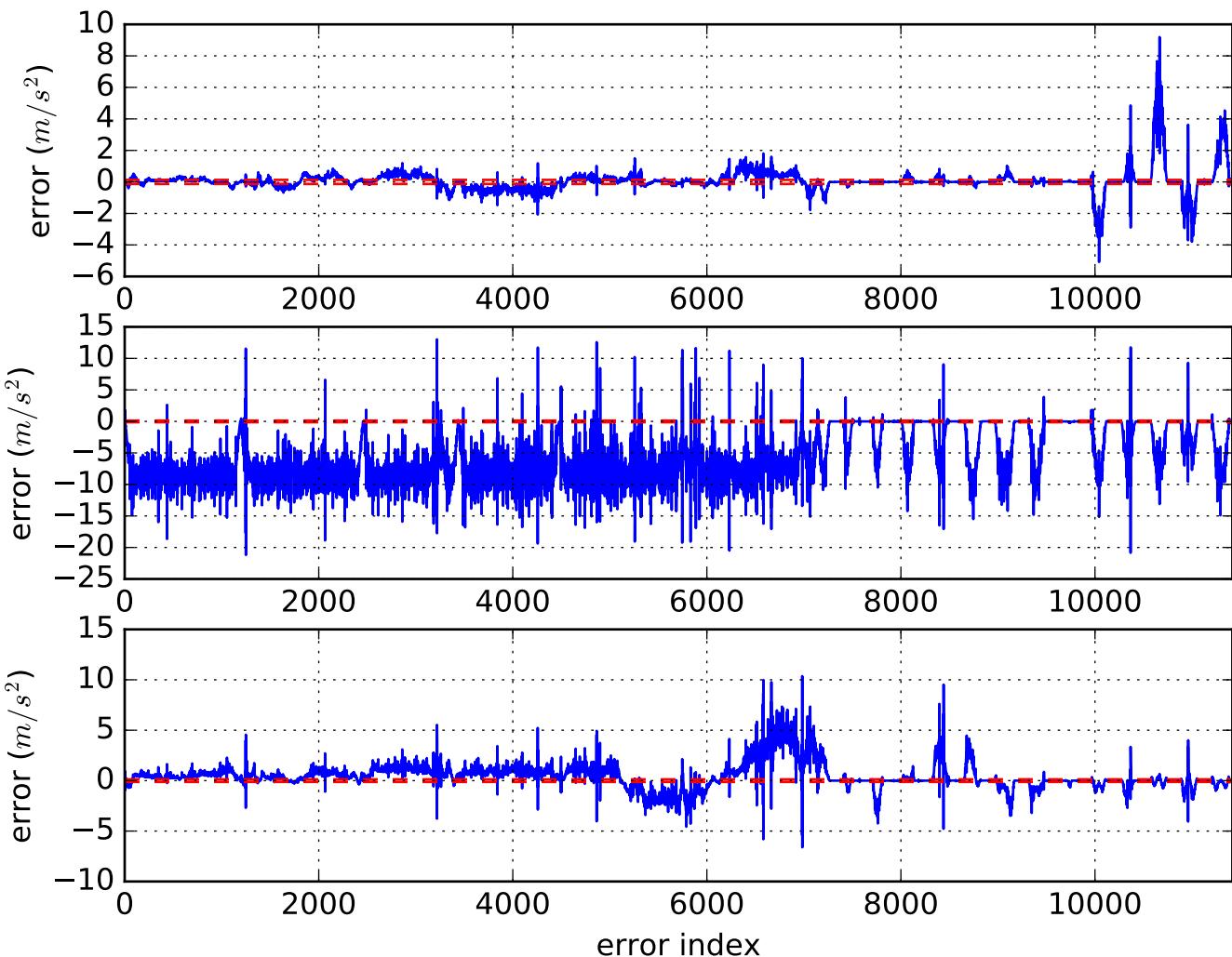
$T_{i,b}$   
  [[ 1. 0. 0. 0.]  
   [ 0. 1. 0. 0.]  
   [ 0. 0. 1. 0.]  
   [ 0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

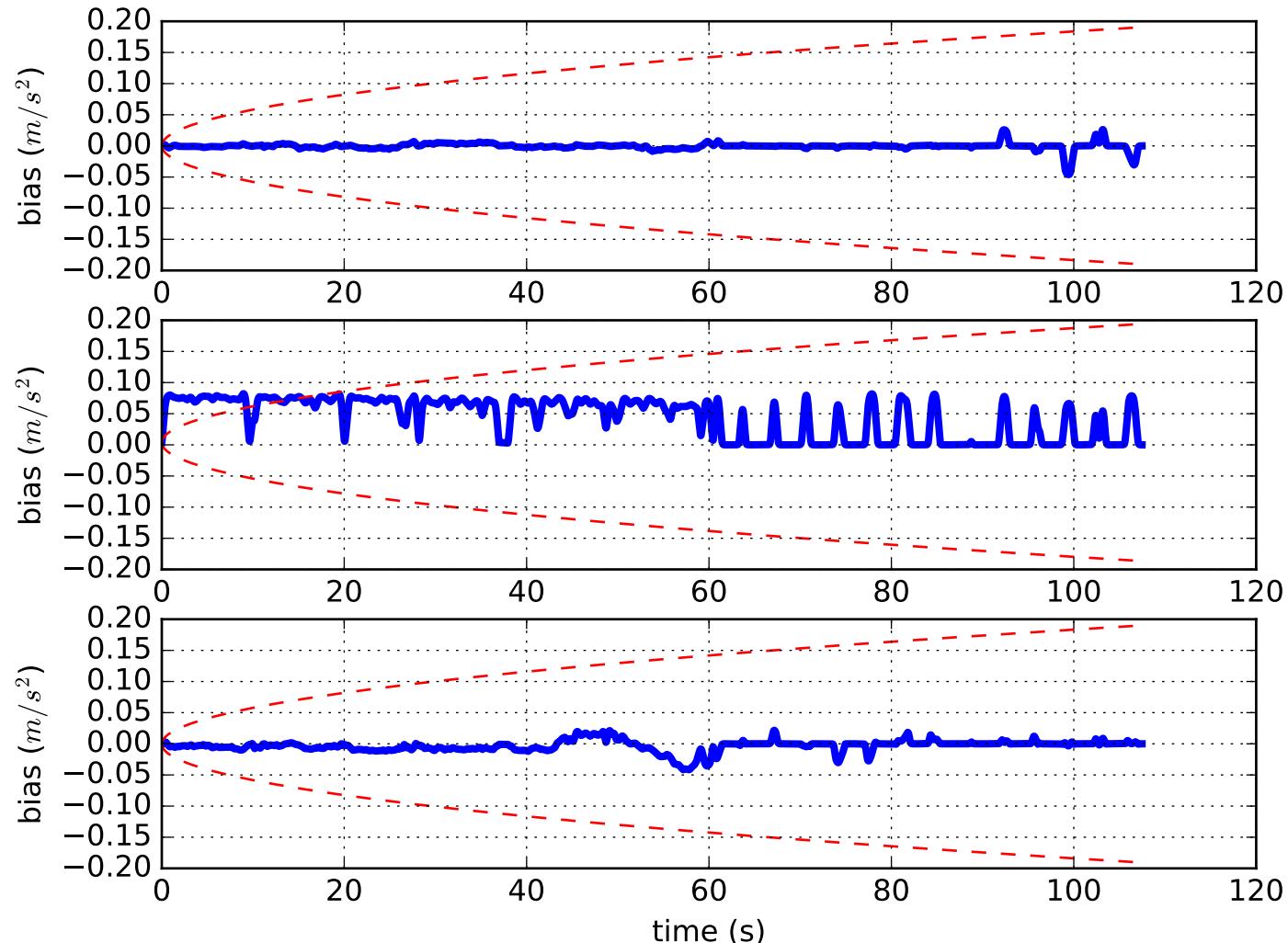
Comparison of predicted and measured specific force (imu0 frame)



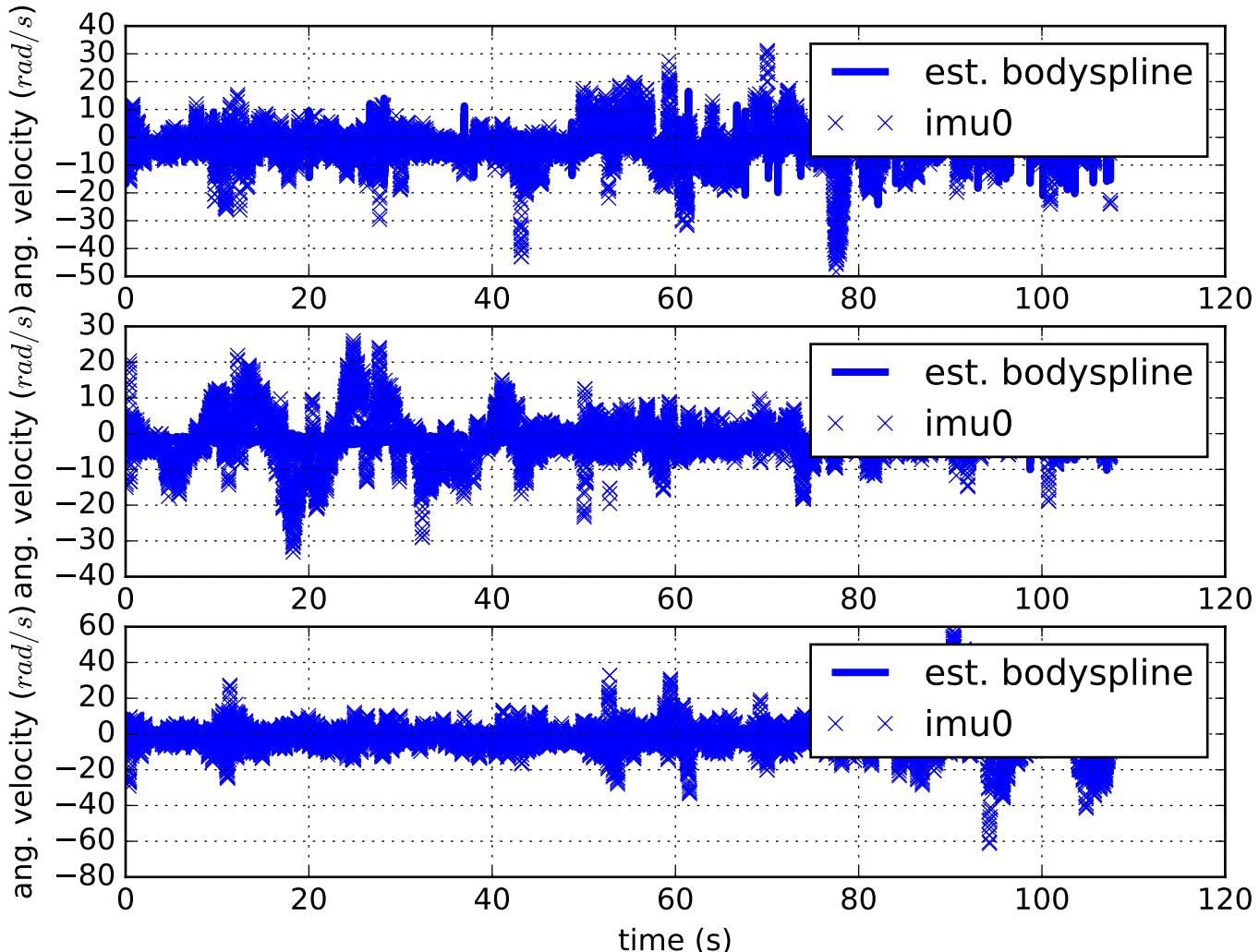
# imu0: acceleration error



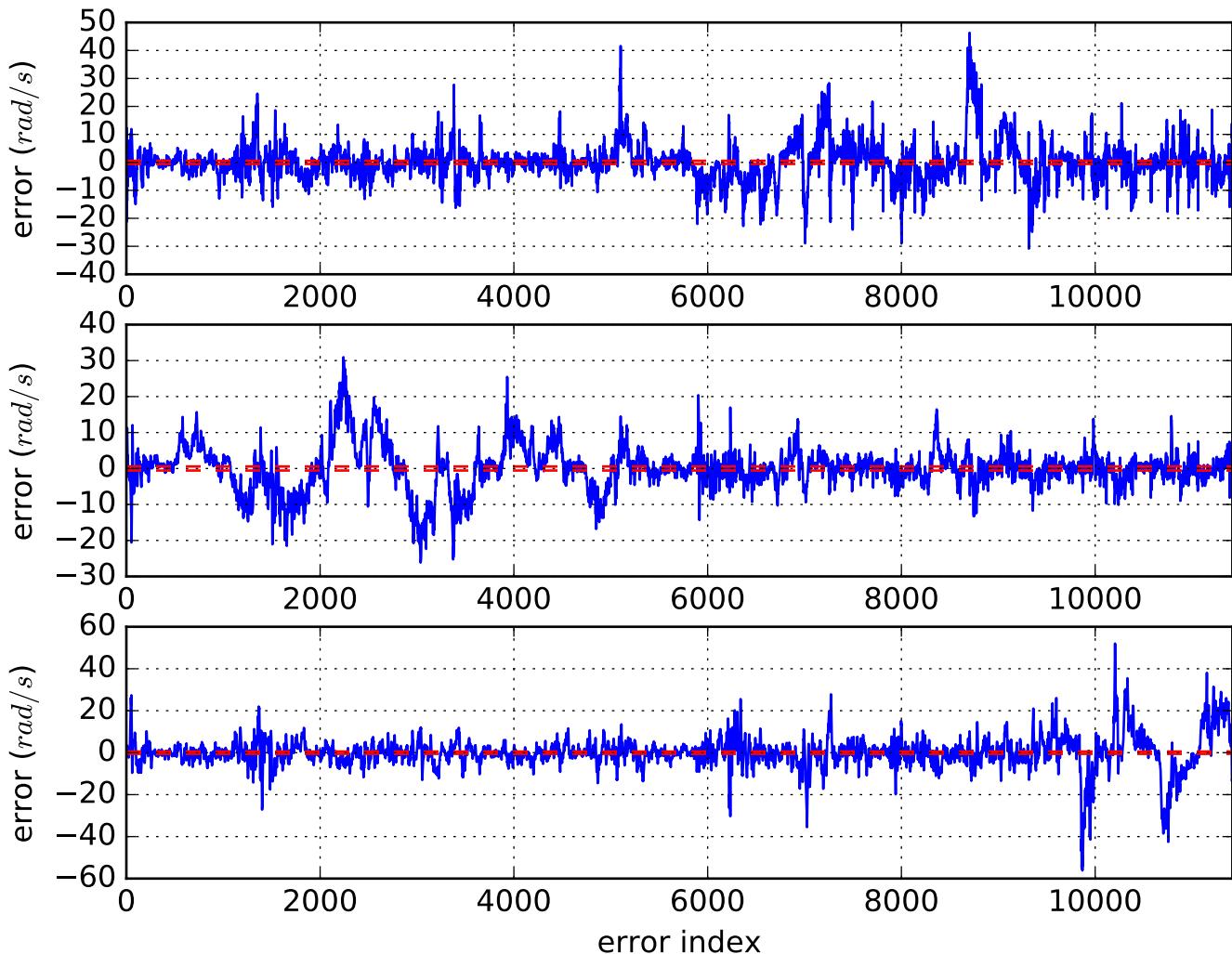
# imu0: estimated accelerometer bias (imu frame)



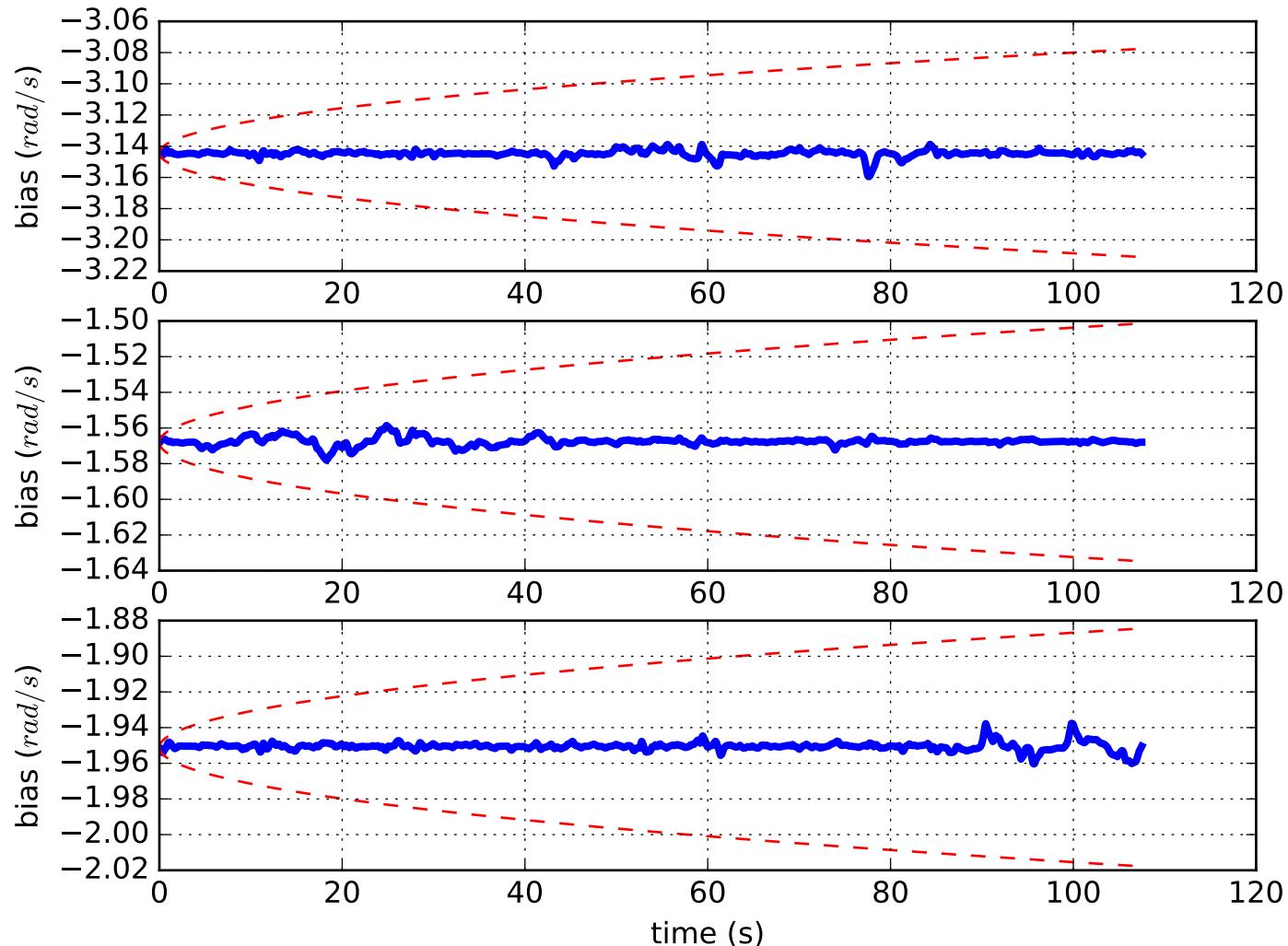
Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



# imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

