

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 0.0475110566086, median 0.0434539993195, std: 0.0267182987818  
Gyroscope error (imu0): mean 0.124143453385, median 0.0726863927039, std: 0.134660850711  
Accelerometer error (imu0): mean 2.43157766069, median 0.973027061712, std: 3.30085898517

### Residuals

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Reprojection error (cam0) [px]: mean 0.0475110566086, median 0.0434539993195, std: 0.0267182987818  
Gyroscope error (imu0) [rad/s]: mean 0.00877826777282, median 0.00513970411809, std: 0.0095219600  
Accelerometer error (imu0) [m/s<sup>2</sup>]: mean 0.343877010571, median 0.137606806723, std: 0.46681195443

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

```
[[ 0.9999699  0.00027655  0.00775393 -0.04207697]
 [-0.00020962  0.99996273 -0.00863056 -0.00802731]
 [-0.00775603  0.00862868  0.99993269 -0.00608506]
 [ 0.          0.          0.          1.          ]]
```

T\_ic: (cam0 to imu0):

```
[[ 0.9999699 -0.00020962 -0.00775603  0.04202683]
 [ 0.00027655  0.99996273  0.00862868  0.00809115]
 [ 0.00775393 -0.00863056  0.99993269  0.00634163]
 [ 0.          0.          0.          1.          ]]
```

timeshift cam0 to imu0: [s] (t\_imu = t\_cam + shift)  
0.00098742694331843

Gravity vector in target coords: [m/s<sup>2</sup>]

[ 9.80412827 -0.21141317 0.05287878]

Calibration configuration

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Camera model: pinhole  
Focal length: [468.2527687453535, 468.3265694180005]  
Principal point: [364.91196913276707, 215.81303741968622]  
Distortion model: equidistant  
Distortion coefficients: [0.011135829319036753, -0.05338166866546771, 0.15329931633590166, -0.1346  
Type: checkerboard  
Rows  
  Count: 7  
  Distance: 0.07 [m]  
Cols  
  Count: 6  
  Distance: 0.07 [m]

#### IMU configuration

##### =====

##### IMU0:

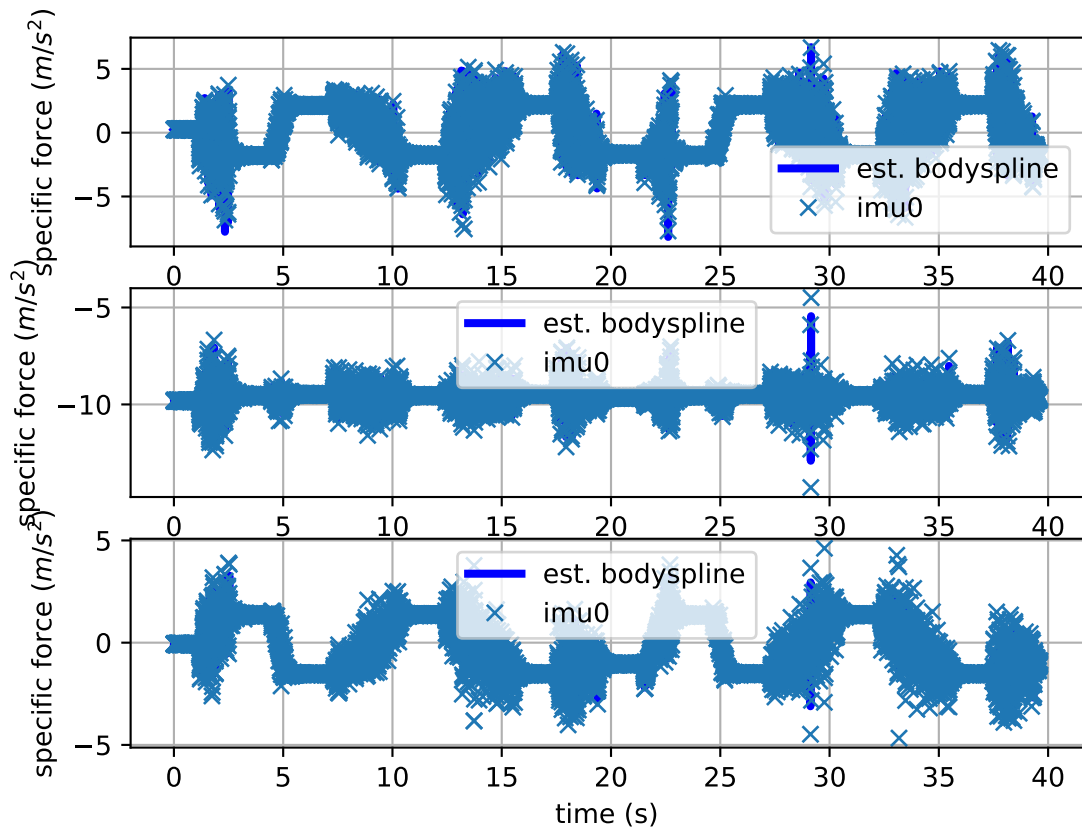
-----  
Model: calibrated  
Update rate: 200.0  
Accelerometer:  
  Noise density: 0.01  
  Noise density (discrete): 0.141421356237  
  Random walk: 0.0002  
Gyroscope:  
  Noise density: 0.005  
  Noise density (discrete): 0.0707106781187  
  Random walk: 4e-06

##### T\_i\_b

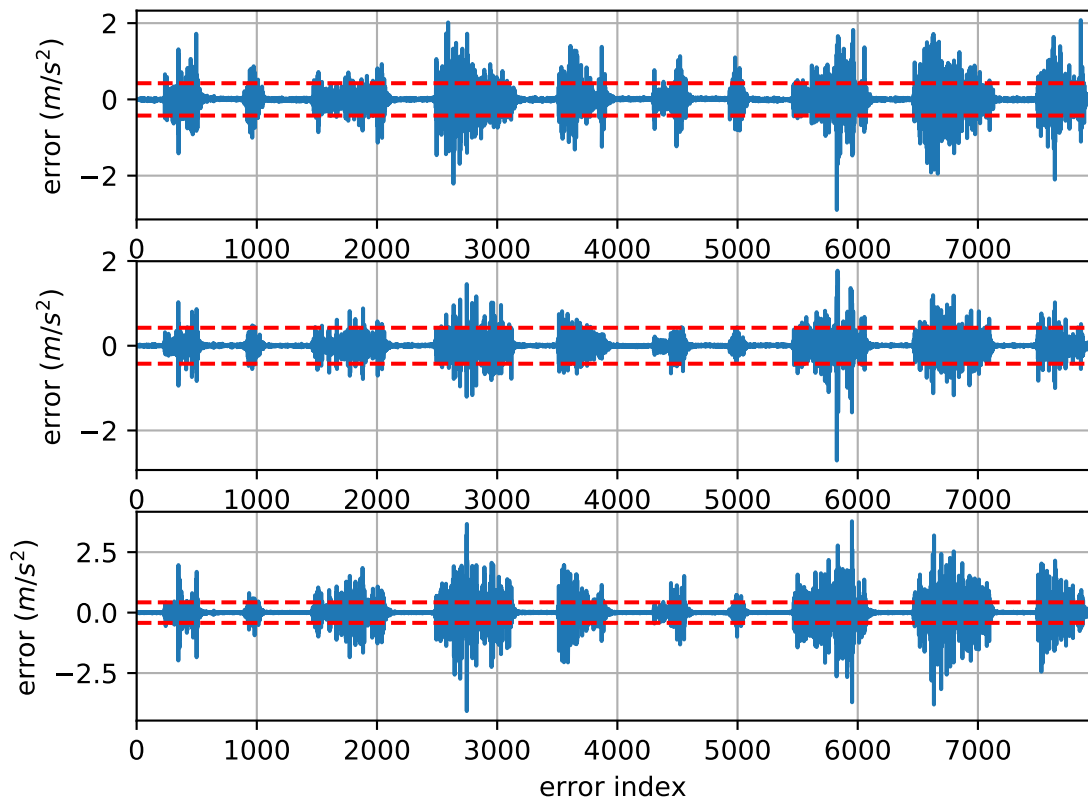
[[1. 0. 0. 0.]  
[0. 1. 0. 0.]  
[0. 0. 1. 0.]  
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

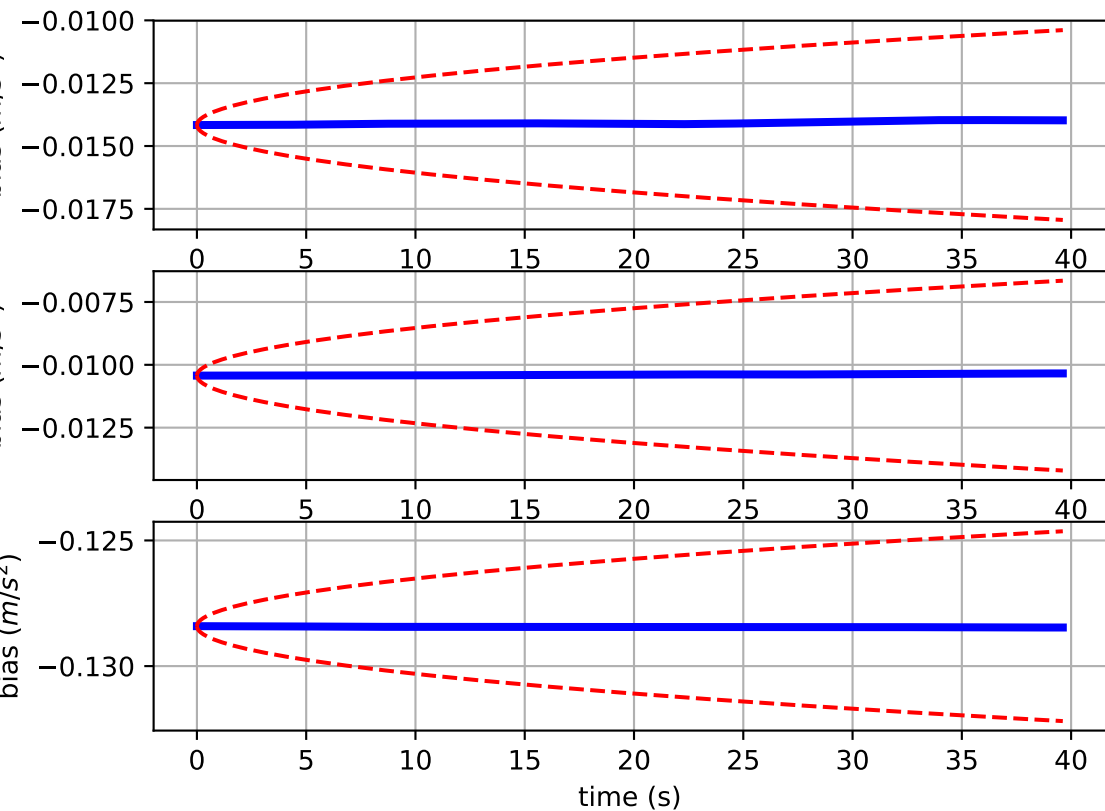
Comparison of predicted and measured specific force (imu0 frame)



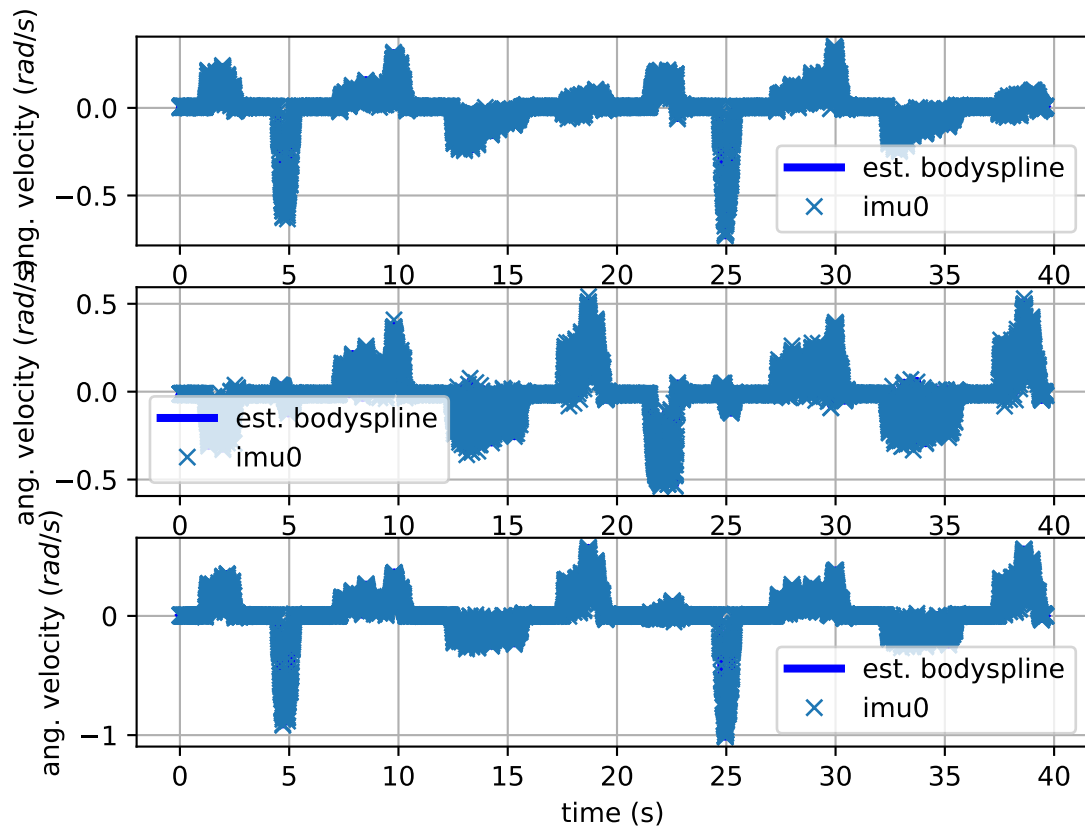
imu0: acceleration error



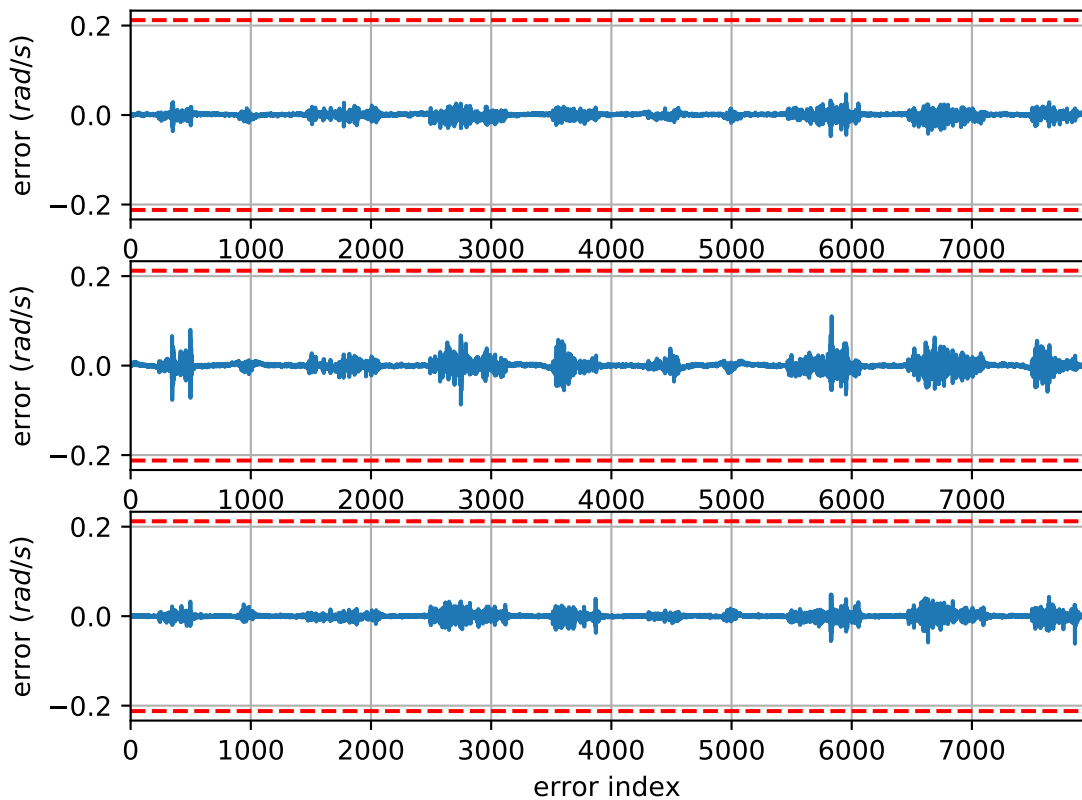
imu0: estimated accelerometer bias (imu frame)



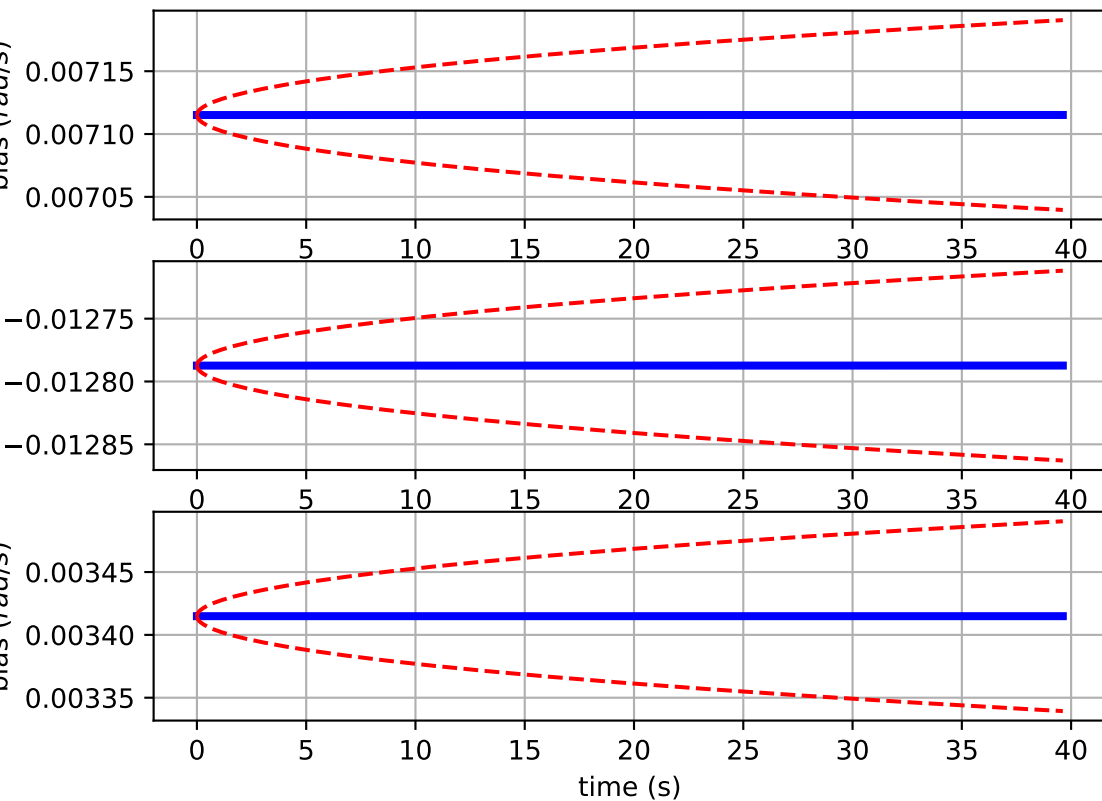
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)





cam0: reprojection errors

