

## Calibration results

### Normalized Residuals

Reprojection error (cam0): mean 0.447654354208, median 0.316760481376, std: 0.413750699381  
Gyroscope error (imu0): mean 1.34132224991, median 1.19541770884, std: 0.997329350494  
Accelerometer error (imu0): mean 4.70506429844, median 3.56312314148, std: 3.5514995983

### Residuals

Reprojection error (cam0) [px]: mean 0.447654354208, median 0.316760481376, std: 0.413750699381  
Gyroscope error (imu0) [rad/s]: mean 0.0948458058667, median 0.0845287968269, std: 0.070521000000  
Accelerometer error (imu0) [m/s^2]: mean 0.665396574269, median 0.503901707109, std: 0.502257000000

### Transformation (cam0):

T\_ci: (imu0 to cam0):

```
[[ 0.00185578  0.99974159 -0.0226563  0.04057952]
 [ -0.99978294  0.00232505  0.02070425 -0.02258068]
 [ 0.02075157  0.02261296  0.9995289  0.02257822]
 [ 0.          0.          0.          1.          ]]
```

T\_ic: (cam0 to imu0):

```
[[ 0.00185578 -0.99978294  0.02075157 -0.02311962]
 [ 0.99974159  0.00232505  0.02261296 -0.04102709]
 [-0.0226563  0.02070425  0.9995289 -0.02118069]
 [ 0.          0.          0.          1.          ]]
```

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

0.0006745048386534341

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Camera model: pinhole

Focal length: [461.4964895109069, 460.16793531974054]

Principal point: [360.87162226167675, 234.38821842134732]

Distortion model: equidistant

Distortion coefficients: [0.001147811668468915, 0.00615764788300211, -0.007048861965722901,

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: 200.0

Accelerometer:

Noise density: 0.01

Noise density (discrete): 0.141421356237

Random walk: 0.0002

Gyroscope:

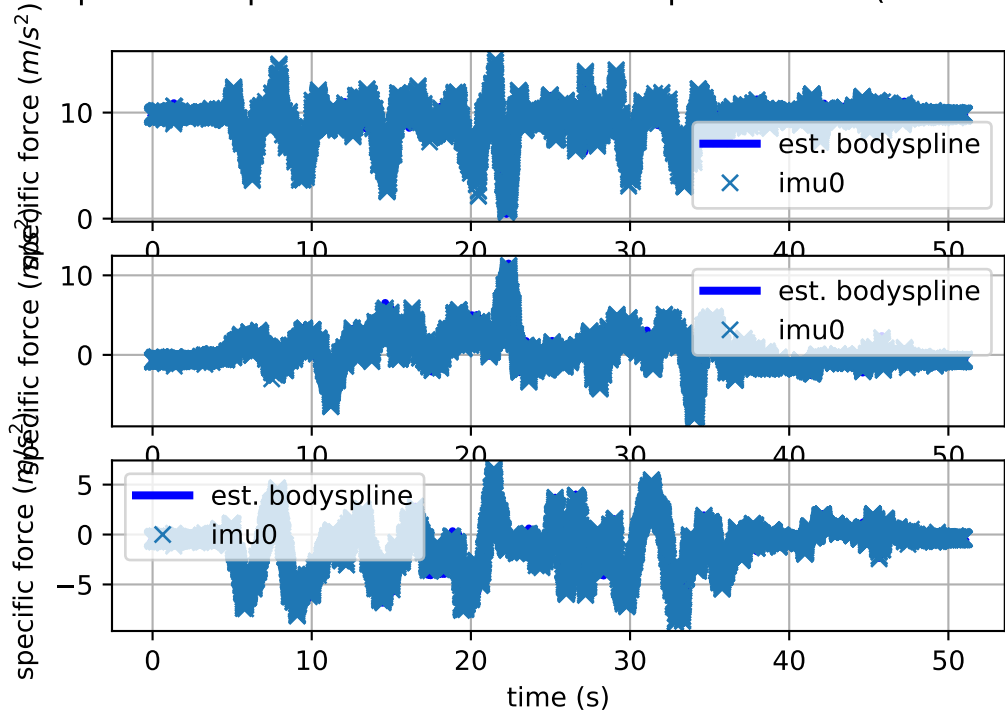
Noise density: 0.005

Noise density (discrete): 0.0707106781187

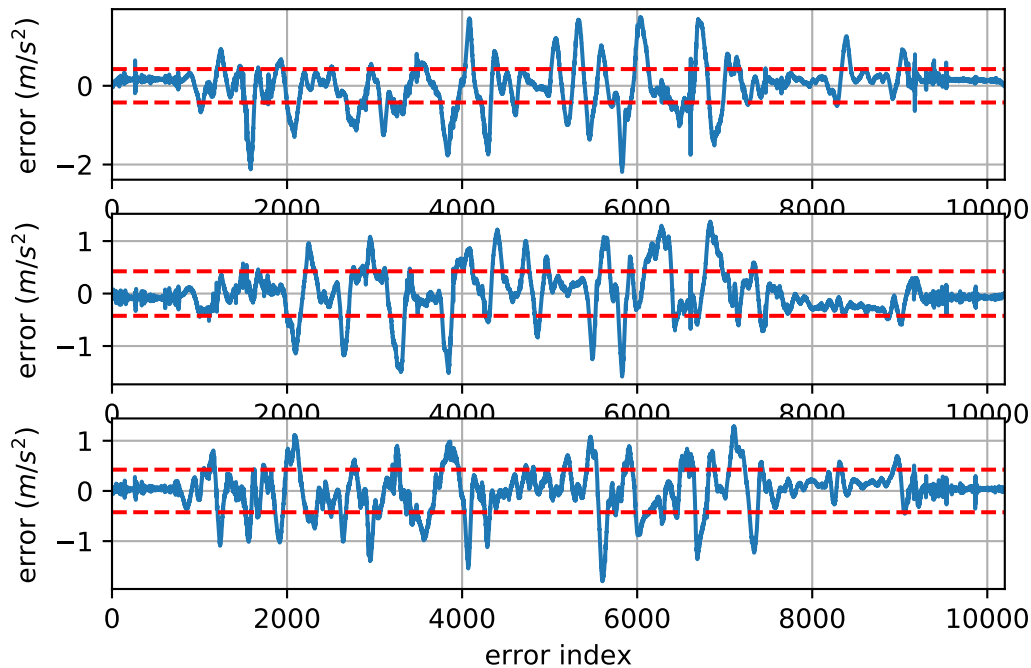
Random walk: 4e-06

T i h

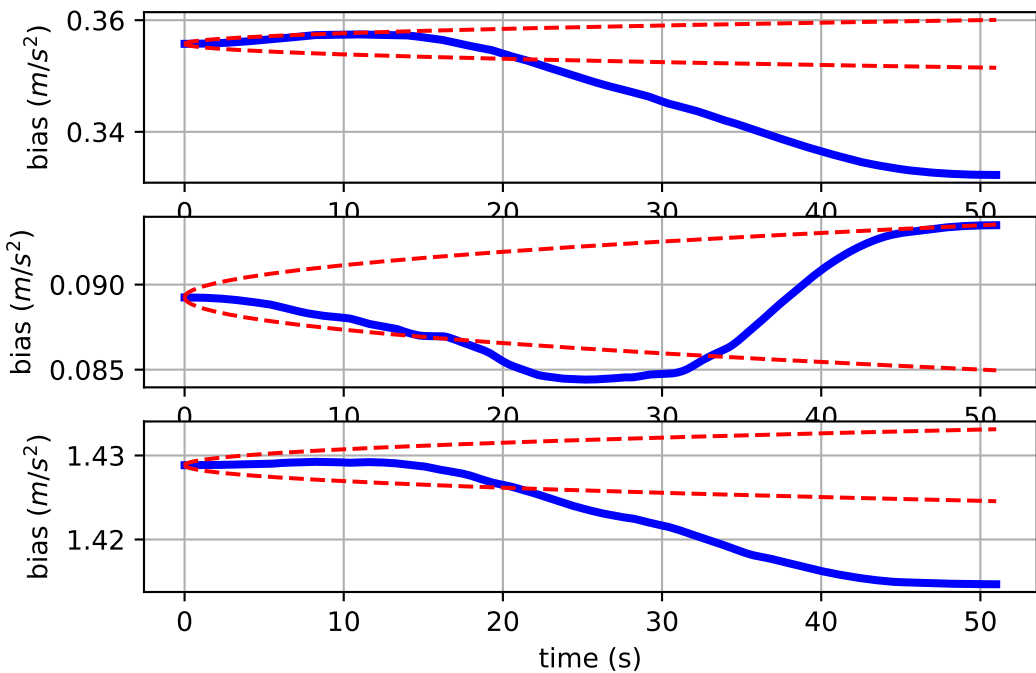
Comparison of predicted and measured specific force (imu0 frame)



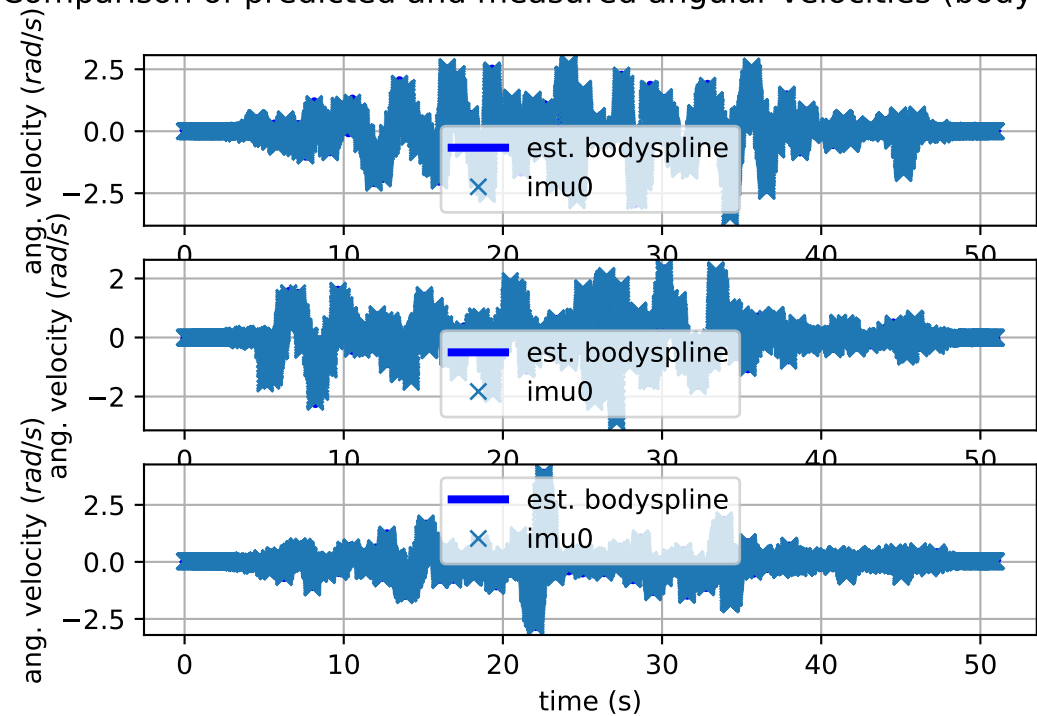
imu0: acceleration error



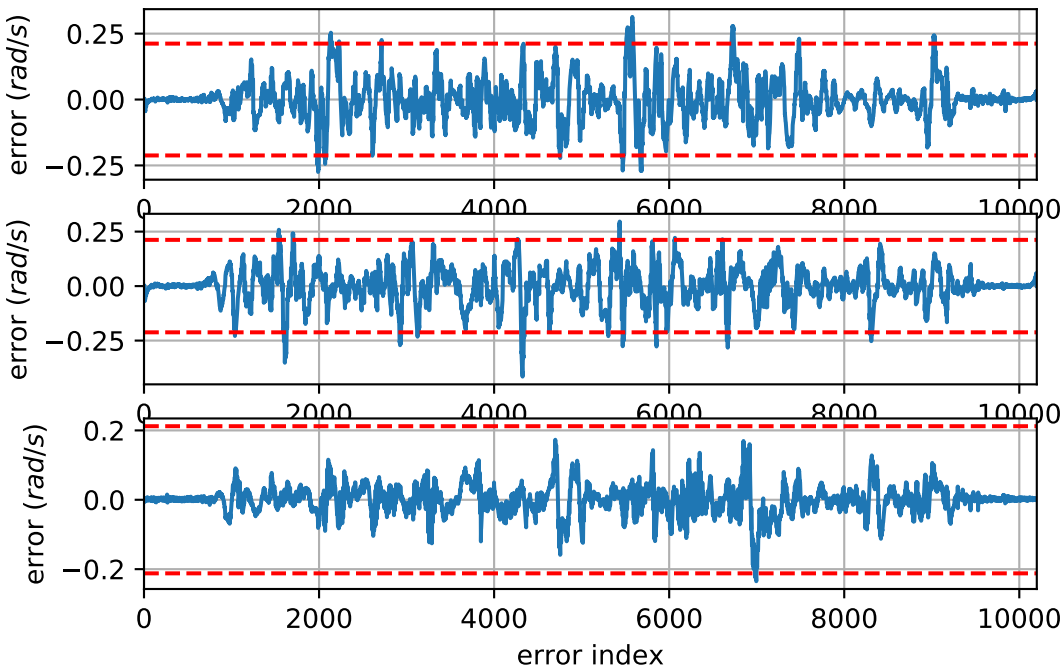
imu0: estimated accelerometer bias (imu frame)



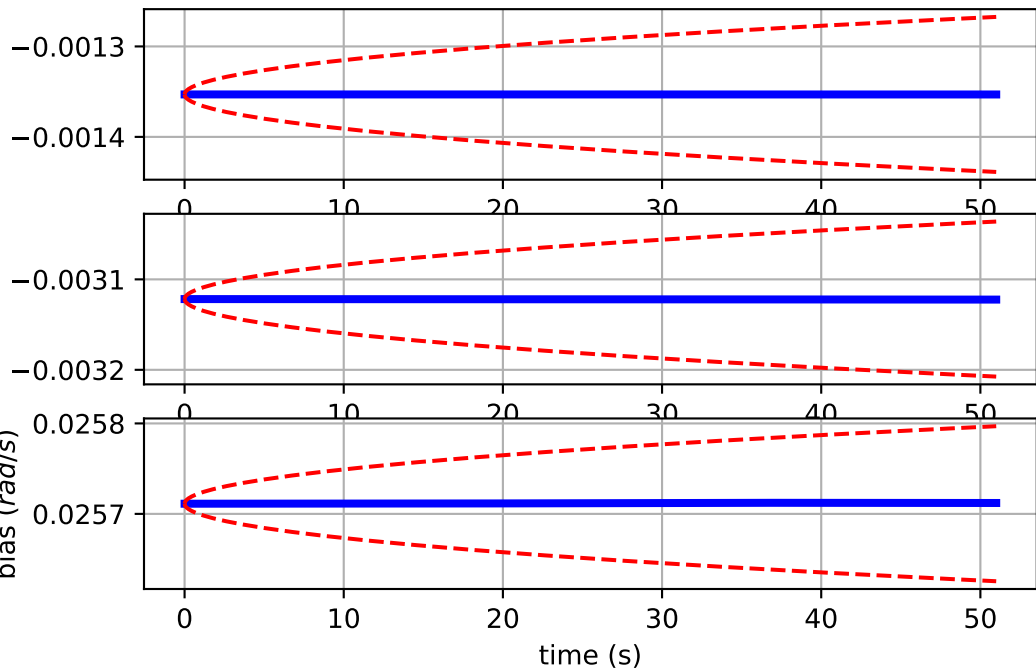
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)





cam0: reprojection errors

