

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.613216394946, median 0.535818073895, std: 0.402676615575
Reprojection error (cam1): mean 0.526697168603, median 0.421670035715, std: 0.381633474244
Gyroscope error (imu0): mean 0.0245157490215, median 0.0209368740449, std: 0.0162225874609
Accelerometer error (imu0): mean 0.0649355295181, median 0.051133099777, std: 0.061104478509

Residuals

Reprojection error (cam0) [px]: mean 0.613216394946, median 0.535818073895, std: 0.402676615575
Reprojection error (cam1) [px]: mean 0.526697168603, median 0.421670035715, std: 0.381633474244
Gyroscope error (imu0) [rad/s]: mean 0.0274094406657, median 0.0234081368004, std: 0.018137404166
Accelerometer error (imu0) [m/s^2]: mean 0.145200258157, median 0.114337087002, std: 0.13663376767

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ -0.02822879 -0.99960149  0.00001218  0.02172388]
 [  0.01440125 -0.00041887 -0.99989621 -0.00006605]
 [  0.99949774 -0.02822568  0.01440734 -0.00048818]
 [  0.          0.          0.          1.         ]]
```

T_ic: (cam0 to imu0):

```
[[ -0.02822879  0.01440125  0.99949774  0.00110212]
 [ -0.99960149 -0.00041887 -0.02822568  0.02170142]
 [  0.00001218 -0.99989621  0.01440734 -0.00005928]
 [  0.          0.          0.          1.         ]]
```

timeshift cam0 to imu0: [s] ($t_{imu} = t_{cam} + \text{shift}$)
-0.0166845720919

Transformation (cam1):

T_ci: (imu0 to cam1):

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

T_ic: (cam1 to imu0):

```
[[-0.01182306 0.01155299 0.99986336 -0.00029028]  
[-0.99987014 0.01081377 -0.01194809 -0.05790695]  
[-0.01095033 -0.99987479 0.01142364 -0.0001919 ]  
[ 0.      0.      0.      1.    ]]
```

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)

-0.0165914312471

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.9998053  0.01119774 0.01624713 -0.07961594]  
[-0.01114776 0.99993286 -0.00316357 0.00074435]  
[-0.01628147 0.00298183 0.999863  0.00044255]  
[ 0.      0.      0.      1.    ]]
```

baseline norm: 0.0796206523673 [m]

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

[0.078163 -9.27130891 -3.1945492]

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [278.66723066149086, 278.48991409740296]

Principal point: [319.75221200593535, 241.96858910358173]

Distortion model: equidistant

Distortion coefficients: [-0.013721808247486035, 0.020727425669427896, -0.012786476702685545, 0.00

Type: aprilgrid

Tags:

Spacing 0.015 [m]

cam1

Camera model: pinhole

Focal length: [277.61640629770613, 277.63749695723294]

Principal point: [314.8944703346039, 236.04310050462587]

Distortion model: equidistant

Distortion coefficients: [-0.008456929295619607, 0.011407590938612062, -0.006951788325762078, 0.00

Type: aprilgrid

Tags:

Rows: 4

Cols: 5

Size: 0.075 [m]

Spacing 0.015 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 500.0

Accelerometer:

Noise density: 0.1

Noise density (discrete): 2.2360679775

Random walk: 0.002

Gyroscope:

Noise density: 0.05

Noise density (discrete): 1.11803398875

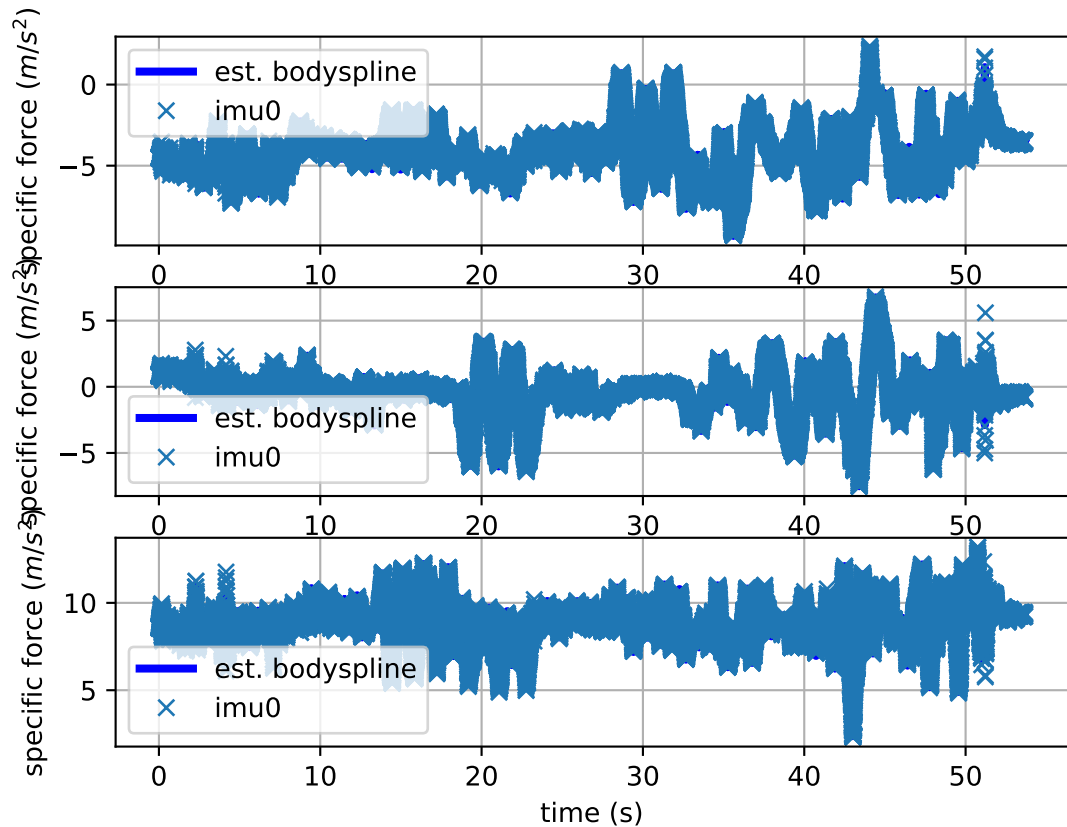
Random walk: 4e-05

T_i_b

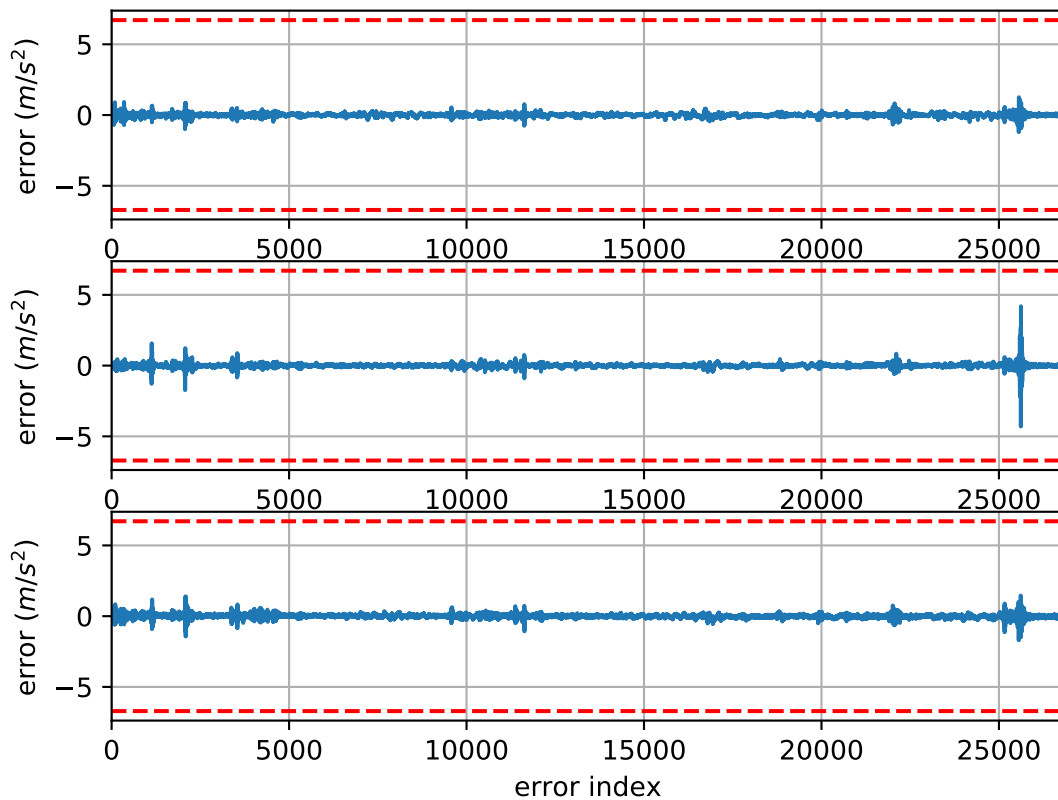
[[1. 0. 0. 0.]

[0. 1. 0. 0.]

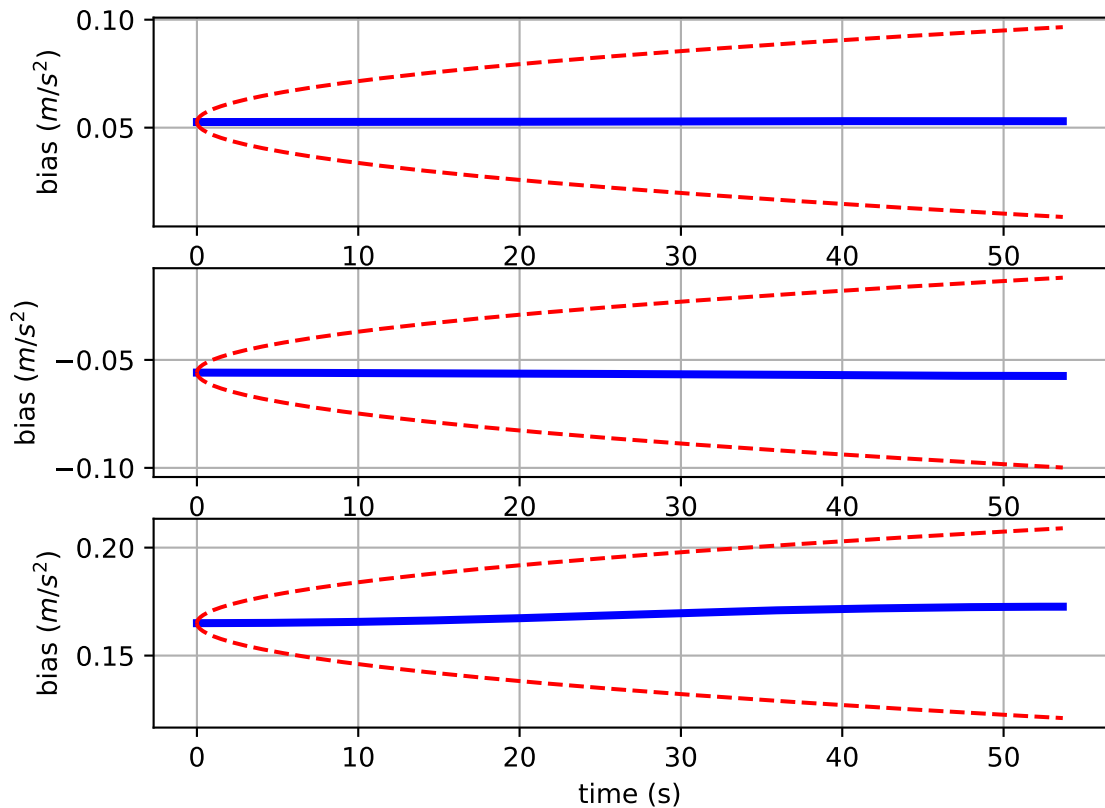
Comparison of predicted and measured specific force (imu0 frame)



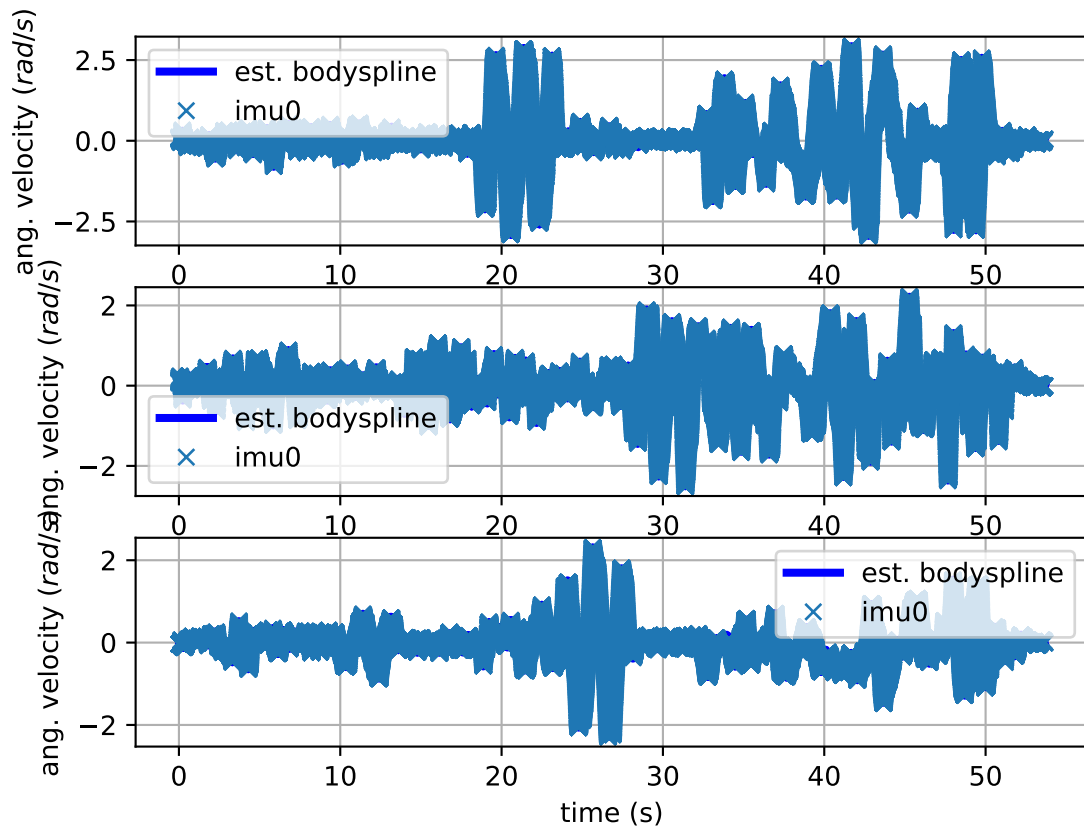
imu0: acceleration error



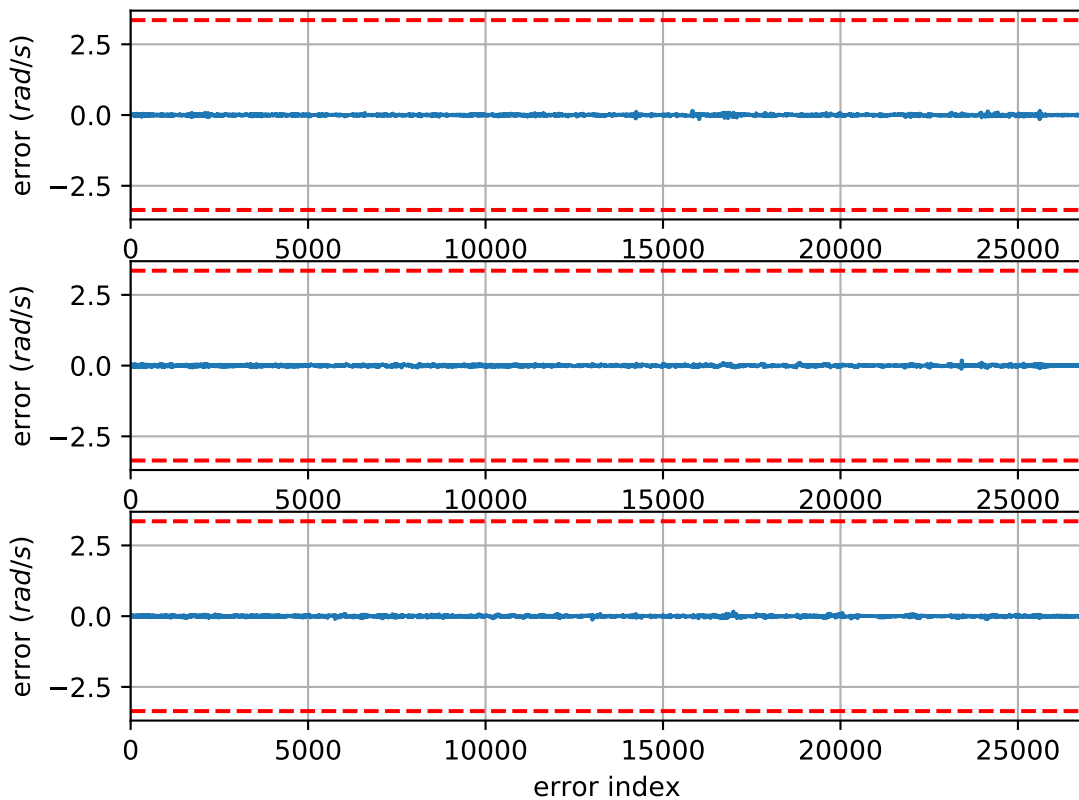
imu0: estimated accelerometer bias (imu frame)



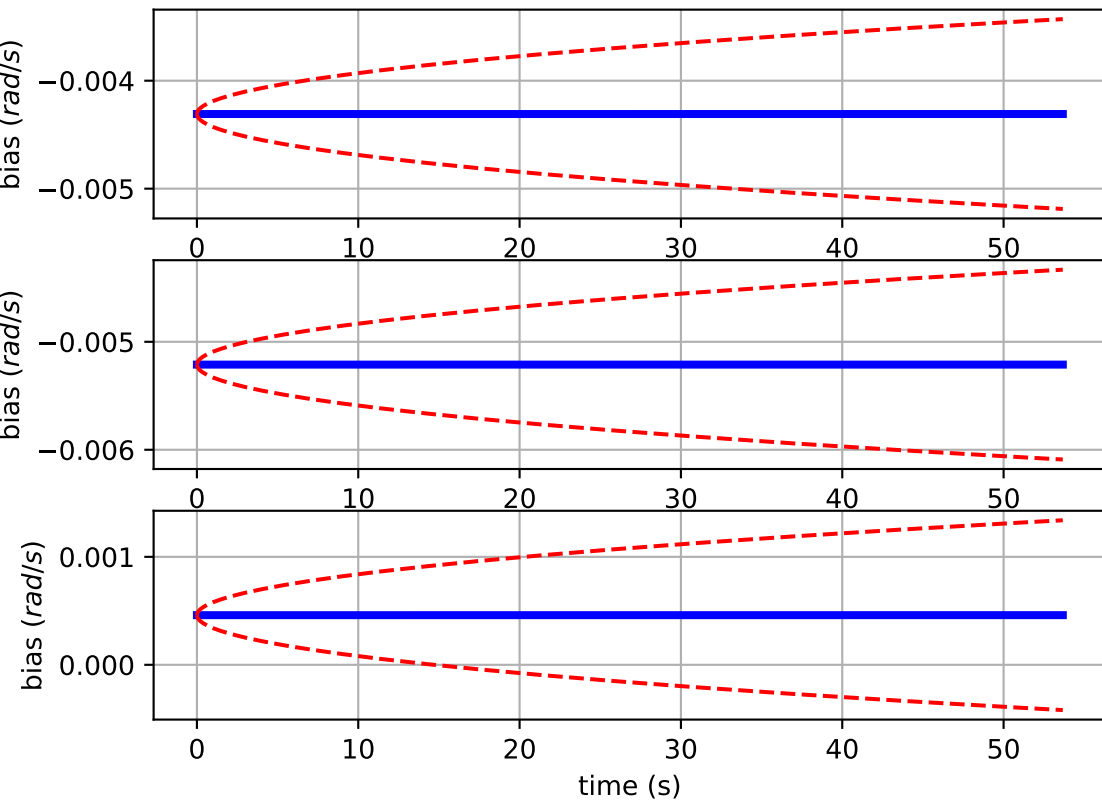
Comparison of predicted and measured angular velocities (body frame)



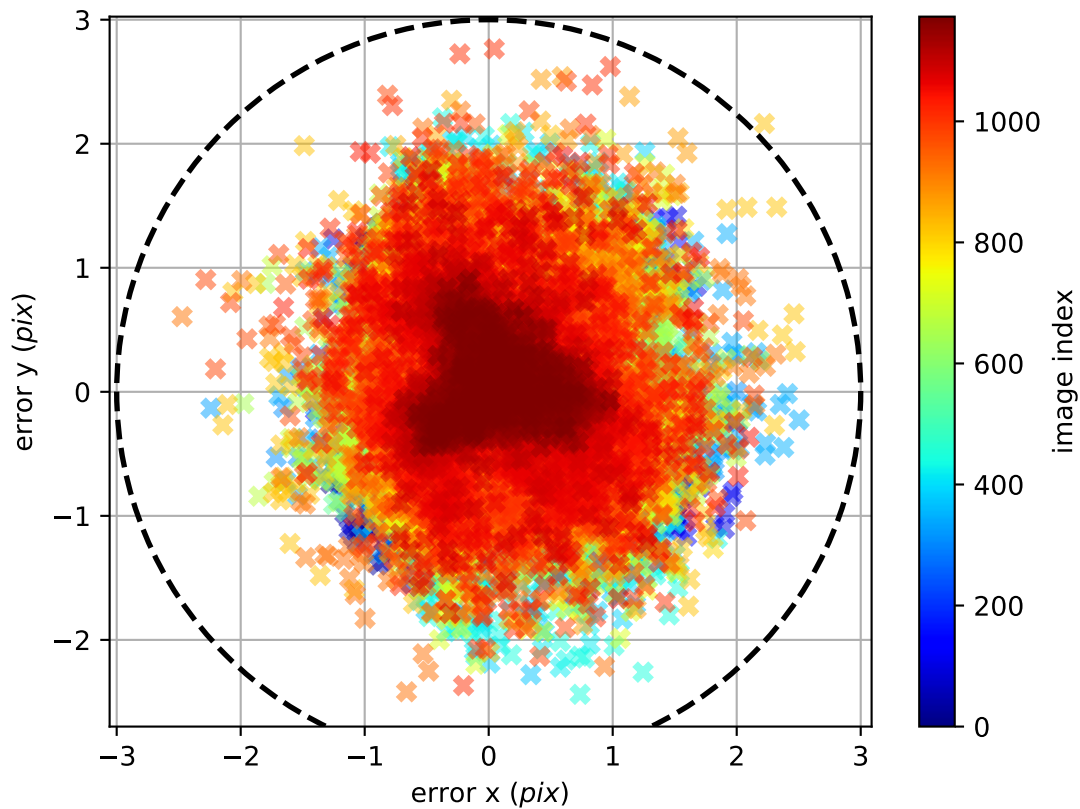
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

