

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.113108881861, median 0.10458549149, std: 0.0627829220076
Reprojection error (cam1): mean 0.118628316717, median 0.109100910505, std: 0.0662970189491
Gyroscope error (imu0): mean 0.000345103232298, median 5.98387056256e-05, std: 0.000791873319
Accelerometer error (imu0): mean 0.00105528198956, median 0.00106320438068, std: 3.44665896545e-

Residuals

Reprojection error (cam0) [px]: mean 0.113108881861, median 0.10458549149, std: 0.0627829220076
Reprojection error (cam1) [px]: mean 0.118628316717, median 0.109100910505, std: 0.0662970189491
Gyroscope error (imu0) [rad/s]: mean 1.25559336675e-05, median 2.17711904228e-06, std: 2.881082511
Accelerometer error (imu0) [m/s^2]: mean 0.000303435736553, median 0.000305713740543, std: 9.91052

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ 0.99999993  0.00029662  0.00020956  0.00055627]
 [-0.00029619  0.99999787 -0.00204216  0.00017202]
 [-0.00021016  0.0020421  0.99999789  0.0011258 ]
 [ 0.          0.          0.          1.         ]]
```

T_ic: (cam0 to imu0):

```
[[ 0.99999993 -0.00029619 -0.00021016 -0.00055598]
 [ 0.00029662  0.99999787  0.0020421  -0.00017448]
 [ 0.00020956 -0.00204216  0.99999789 -0.00112557]
 [ 0.          0.          0.          1.         ]]
```

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)

-1.2396458055692252

Transformation (cam1):

T_ci: (imu0 to cam1):

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

T_ic: (cam1 to imu0):

```
[[ 0.99997732 -0.00090209 0.0066739 0.06323632]
 [ 0.00090183 0.99999959 0.00004124 0.00055076]
 [-0.00667393 -0.00003522 0.99997773 -0.00164286]
 [ 0.      0.      0.      1.    ]]
```

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

-1.2399770351964645

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99997613 0.00061928 -0.00688223 -0.06379496]
 [-0.00060548 0.9999978 0.00200707 -0.00066771]
 [ 0.00688346 -0.00200285 0.9999743 0.0000915 ]
 [ 0.      0.      0.      1.    ]]
```

baseline norm: 0.06379852042233992 [m]

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

[-0.62318892 9.76230293 -0.6910138]

Calibration configuration

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cam0

Camera model: omni

Focal length: [840.3541786270555, 841.7395501100224]

Principal point: [426.05865129442844, 400.00487827975144]

Omni xi: 2.00109674298

Distortion model: radtan

Distortion coefficients: [0.26251514138713067, -0.8542295909903589, 0.005012383463787277, 0.000396

Type: aprilgrid

Size: 0.042 [m]
Spacing 0.0126 [m]

cam1

Camera model: omni
Focal length: [858.0616614592365, 859.2884312738671]
Principal point: [420.5531333881858, 399.5995298375353]
Omni xi: 2.06852993016
Distortion model: radtan
Distortion coefficients: [0.3057722348408115, -0.9001536527726495, 0.004399425529691084, -0.002478
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.042 [m]
Spacing 0.0126 [m]

IMU configuration

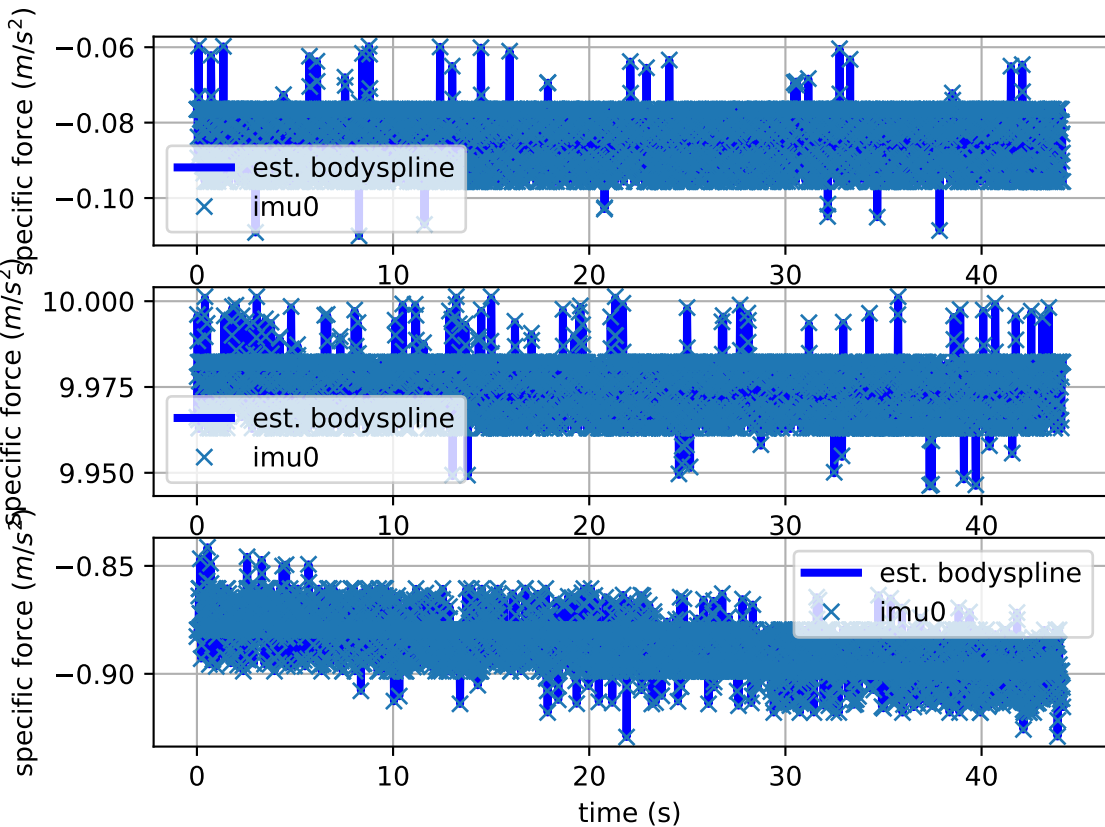
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IMU0:

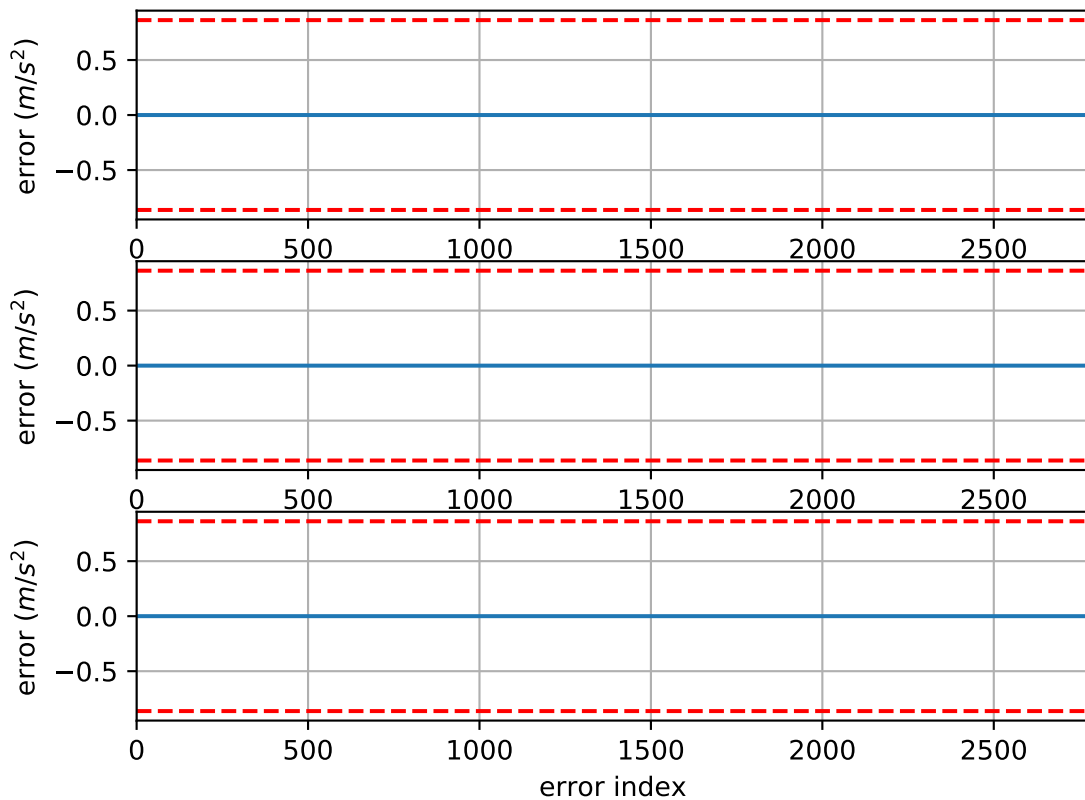
Model: calibrated
Update rate: 200.0
Accelerometer:
Noise density: 0.0203321452553
Noise density (discrete): 0.287539955722
Random walk: 0.000762569641185
Gyroscope:
Noise density: 0.0025726753648
Noise density (discrete): 0.0363831239248
Random walk: 4.17017514218e-05
T_ib (imu0 to imu0)
[1. 0. 0. 0.]

time offset with respect to IMU0: 0.0 [s]

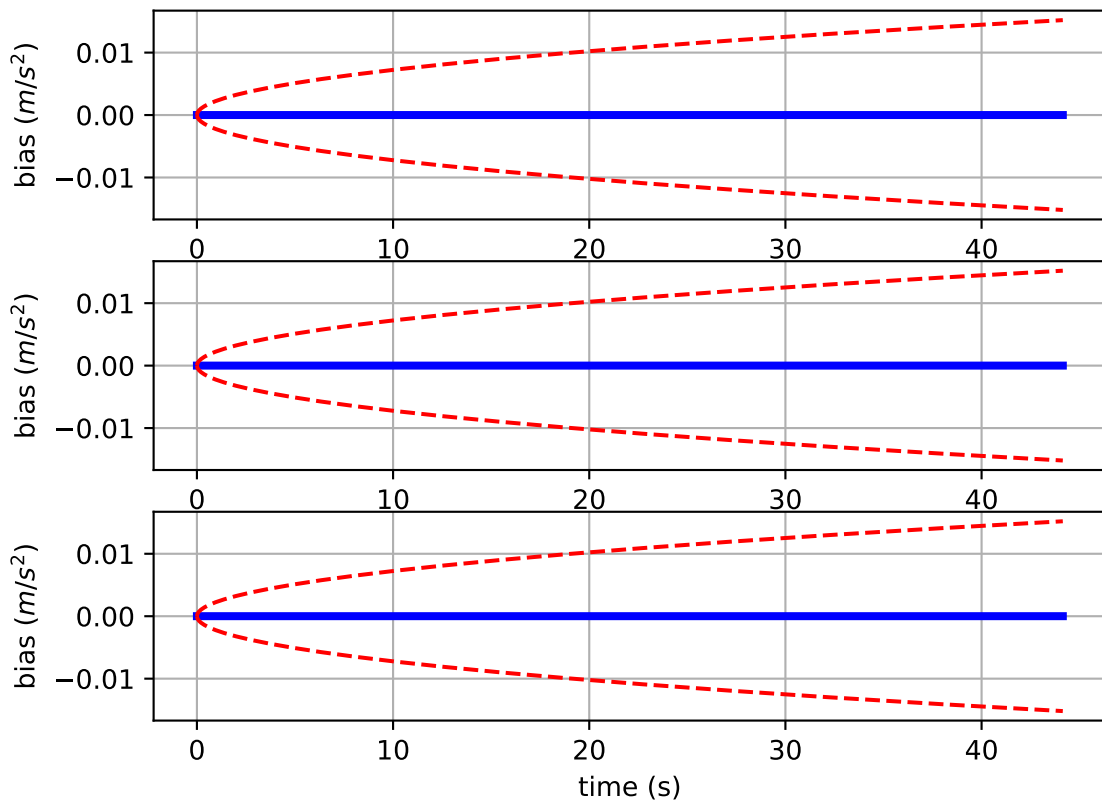
Comparison of predicted and measured specific force (imu0 frame)



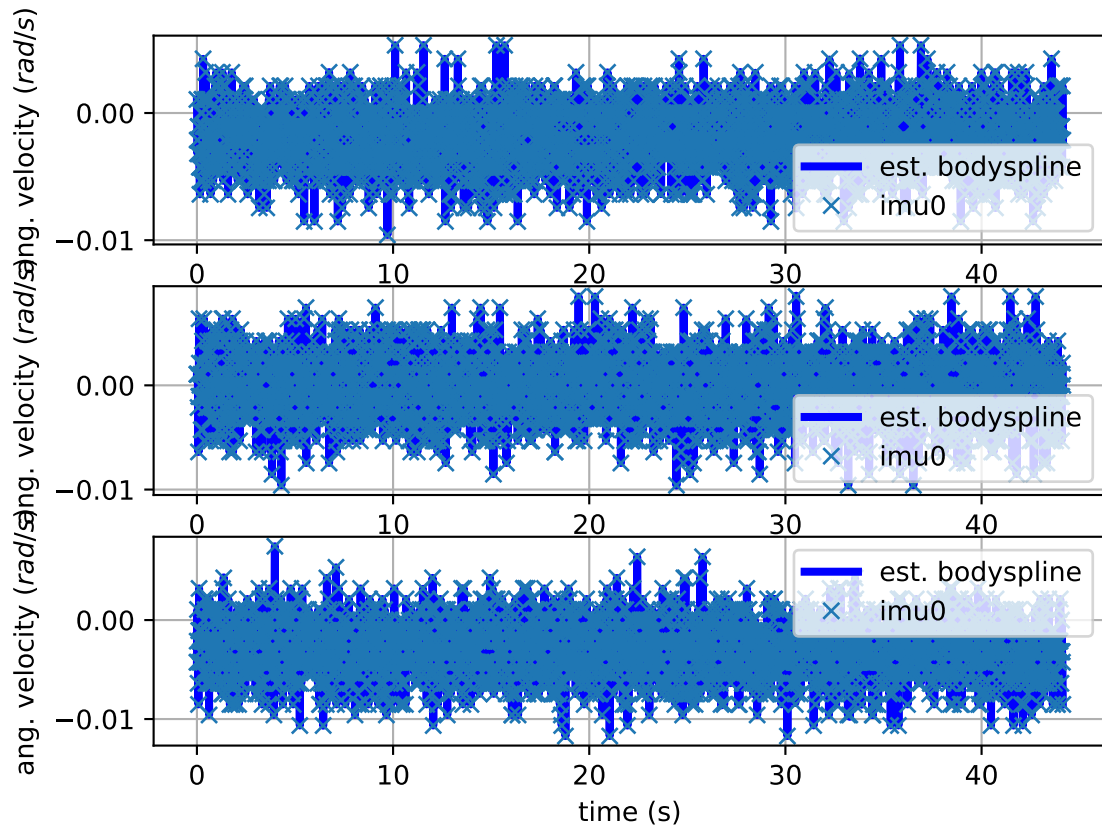
imu0: acceleration error



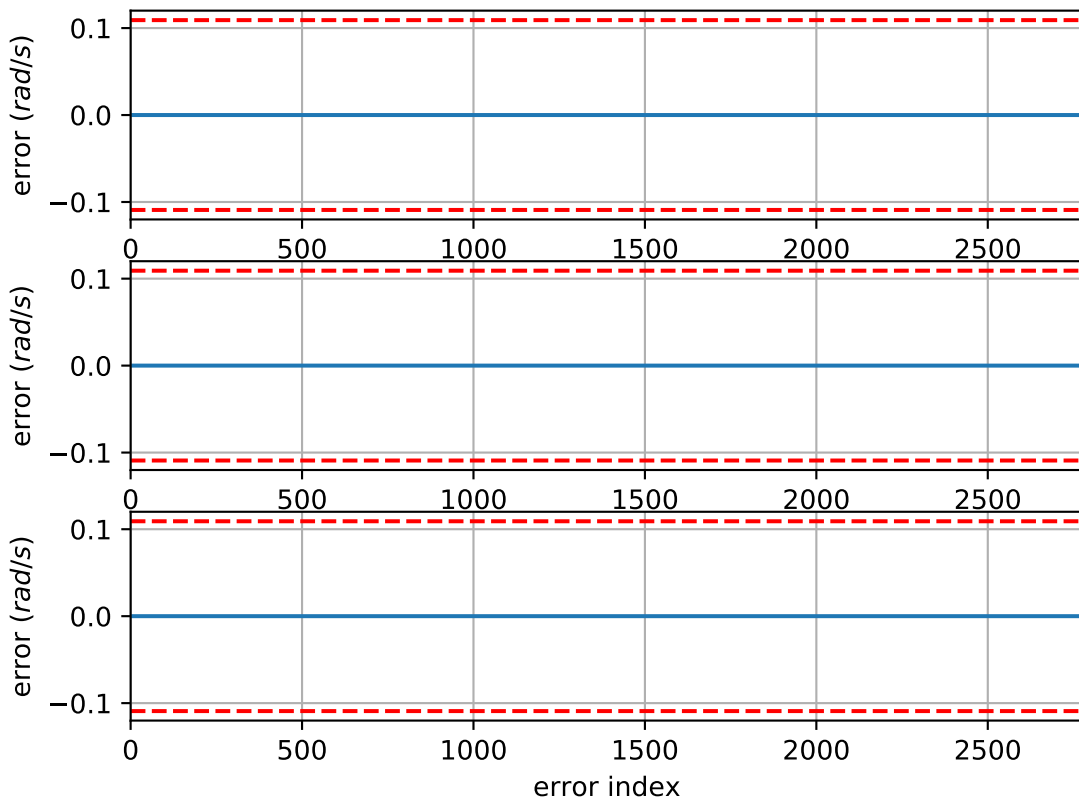
imu0: estimated accelerometer bias (imu frame)



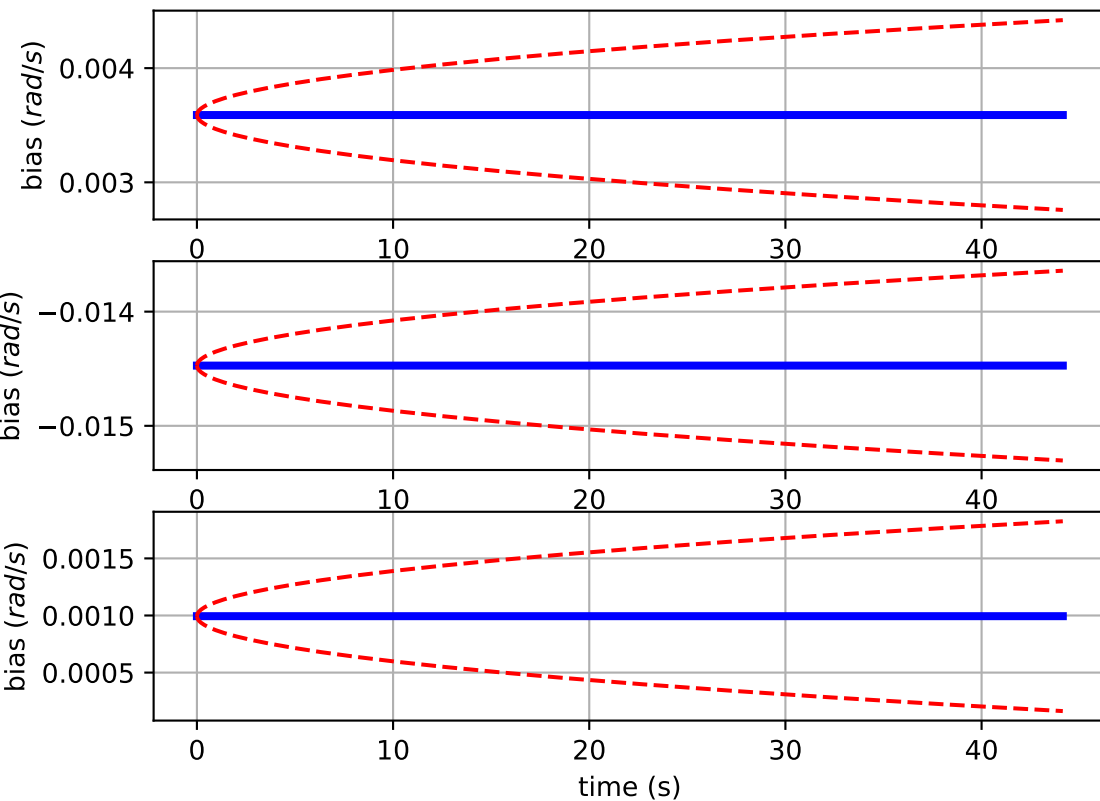
Comparison of predicted and measured angular velocities (body frame)



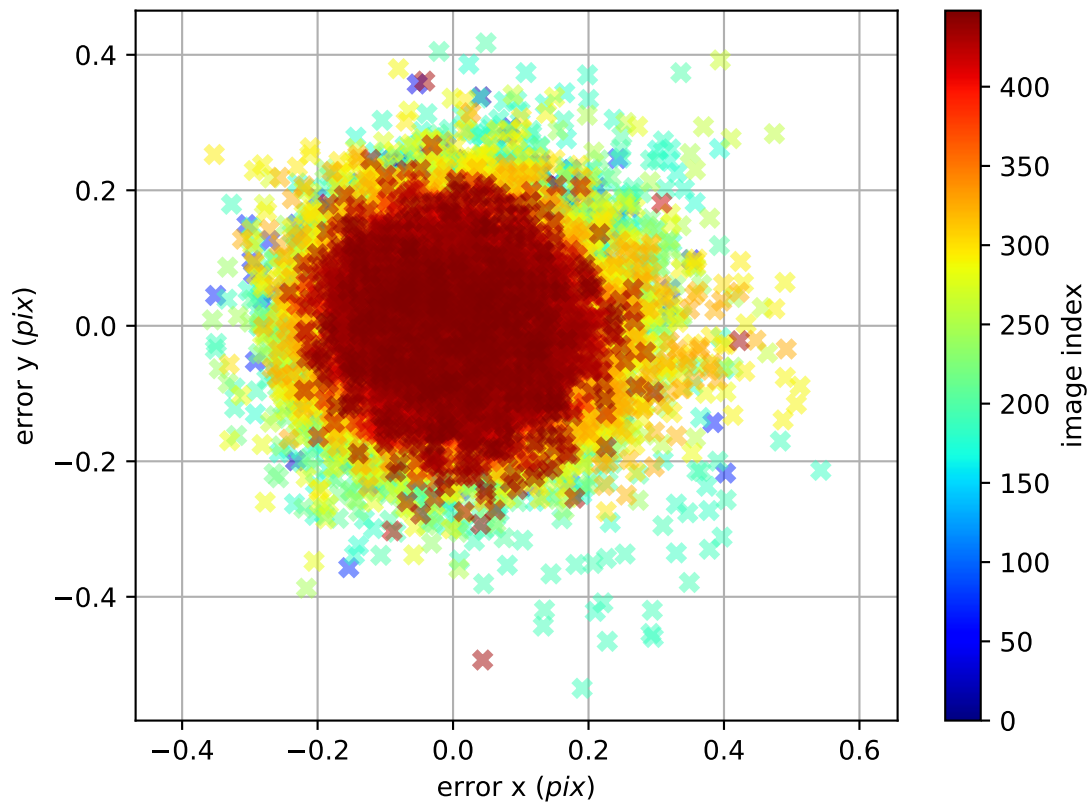
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

