

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.433124942673, median 0.419112349038, std: 0.220351032948
Reprojection error (cam1): mean 0.414732013999, median 0.372922461112, std: 0.230939336437
Gyroscope error (imu0): mean 0.0201161329612, median 0.0181723560345, std: 0.0109223163499
Accelerometer error (imu0): mean 0.056153036967, median 0.0513298407134, std: 0.0278859308598

Residuals

Reprojection error (cam0) [px]: mean 0.433124942673, median 0.419112349038, std: 0.220351032948
Reprojection error (cam1) [px]: mean 0.414732013999, median 0.372922461112, std: 0.230939336437
Gyroscope error (imu0) [rad/s]: mean 0.0224905203728, median 0.0203173117023, std: 0.012211520915
Accelerometer error (imu0) [m/s^2]: mean 0.125562007801, median 0.114777013109, std: 0.06235483701

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ -0.02404152 -0.99966408  0.00968164  0.02023431]
 [ -0.71845273  0.0105427 -0.69549588  0.00831186]
 [  0.69516018 -0.02367658 -0.71846485 -0.02662844]
 [  0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[ -0.02404152 -0.71845273  0.69516018  0.02496917]
 [ -0.99966408  0.0105427 -0.02367658  0.01950941]
 [  0.00968164 -0.69549588 -0.71846485 -0.01354663]
 [  0.          0.          0.          1.        ]]
```

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

-0.00863751181076

Transformation (cam1):

T_ci: (imu0 to cam1):

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

T_ic: (cam1 to imu0):

```
[[-0.00452775 -0.72082383 0.69310354 0.02464282]  
[-0.99995607 0.00895175 0.00277748 -0.05987074]  
[-0.00820657 -0.69306052 -0.72083269 -0.01343195]  
[ 0.      0.      0.      1.    ]]
```

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

-0.00861344601531

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99964957 -0.00158163 0.02642416 -0.0793772 ]  
[ 0.00167099 0.99999296 -0.00336035 0.00055483]  
[-0.02641866 0.00340332 0.99964517 0.00052934]  
[ 0.      0.      0.      1.    ]]
```

baseline norm: 0.0793809045887 [m]

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

[-0.00064429 1.4841178 -9.69359669]

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [275.3385453506587, 275.0852058534152]

Principal point: [315.7697752181792, 233.72625444124952]

Distortion model: equidistant

Distortion coefficients: [-0.017811595366268803, 0.04897078939103475, -0.041363300782847834, 0.011

Type: aprilgrid

Tags:

Spacing 0.015 [m]

cam1

Camera model: pinhole

Focal length: [273.2895238376505, 273.35830490745764]

Principal point: [314.60557378520133, 251.0359907029701]

Distortion model: equidistant

Distortion coefficients: [0.027860492621377443, -0.027723581962855317, 0.0375199775145906, -0.0181

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

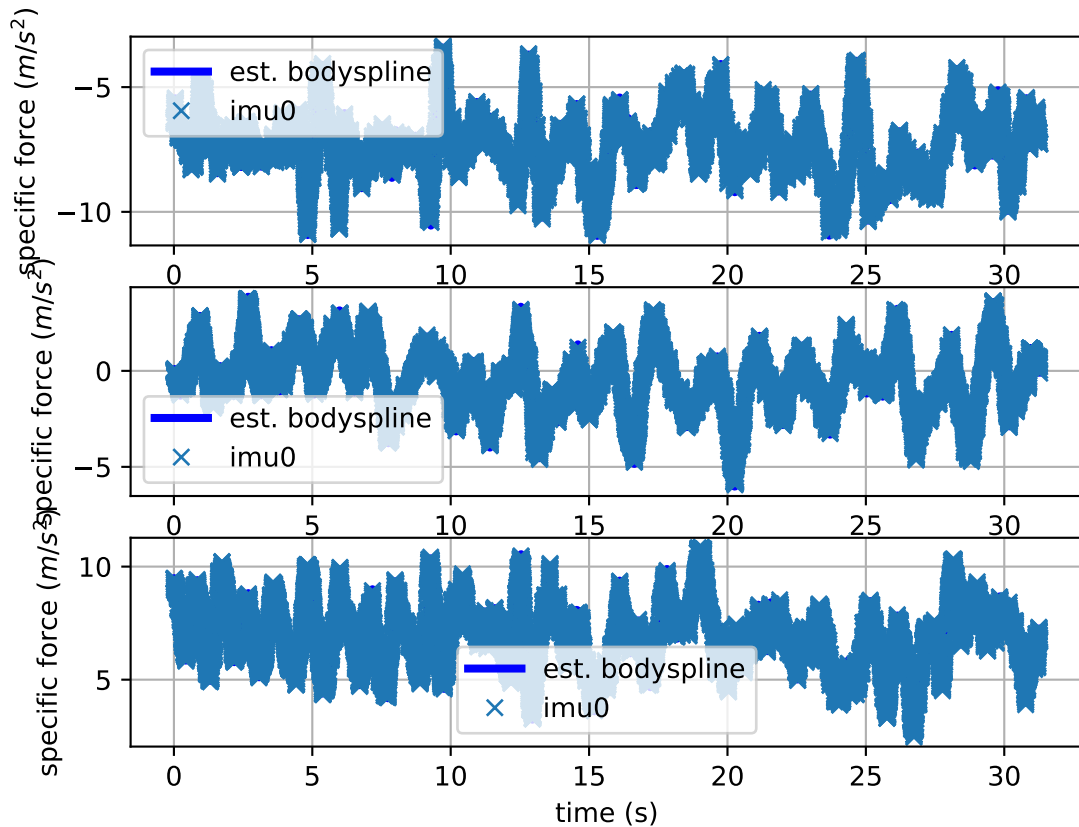
Random walk: 4e-05

T_i_b

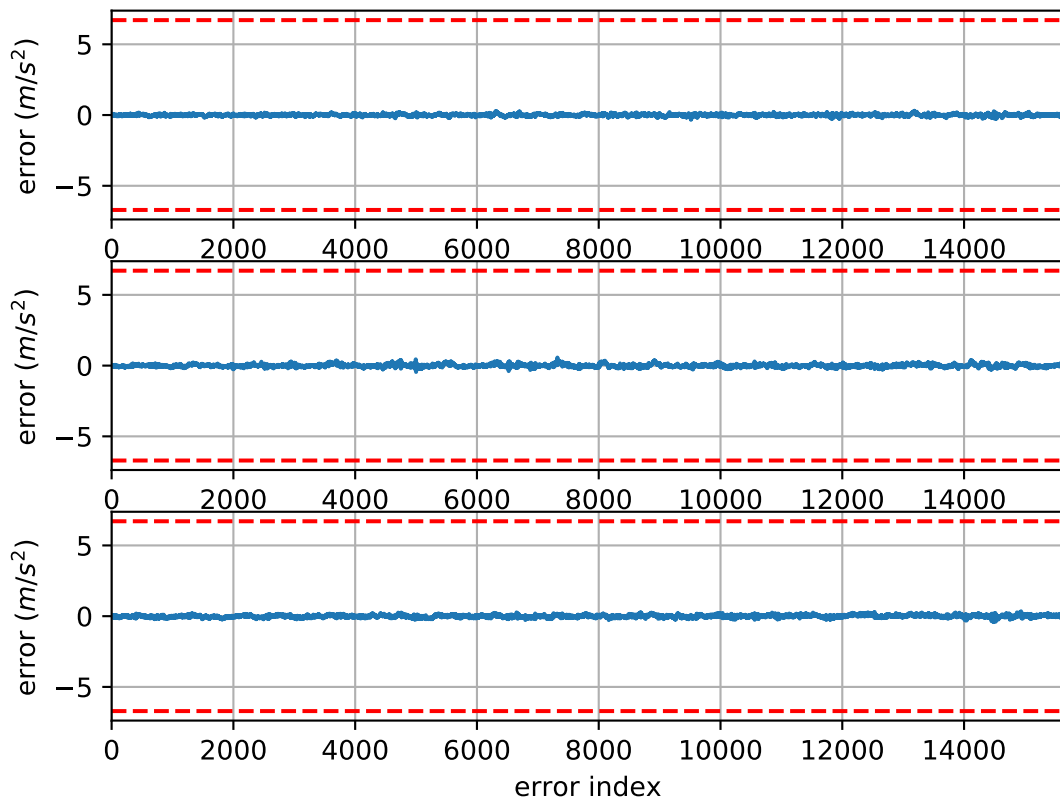
[[1. 0. 0. 0.]

[0. 1. 0. 0.]

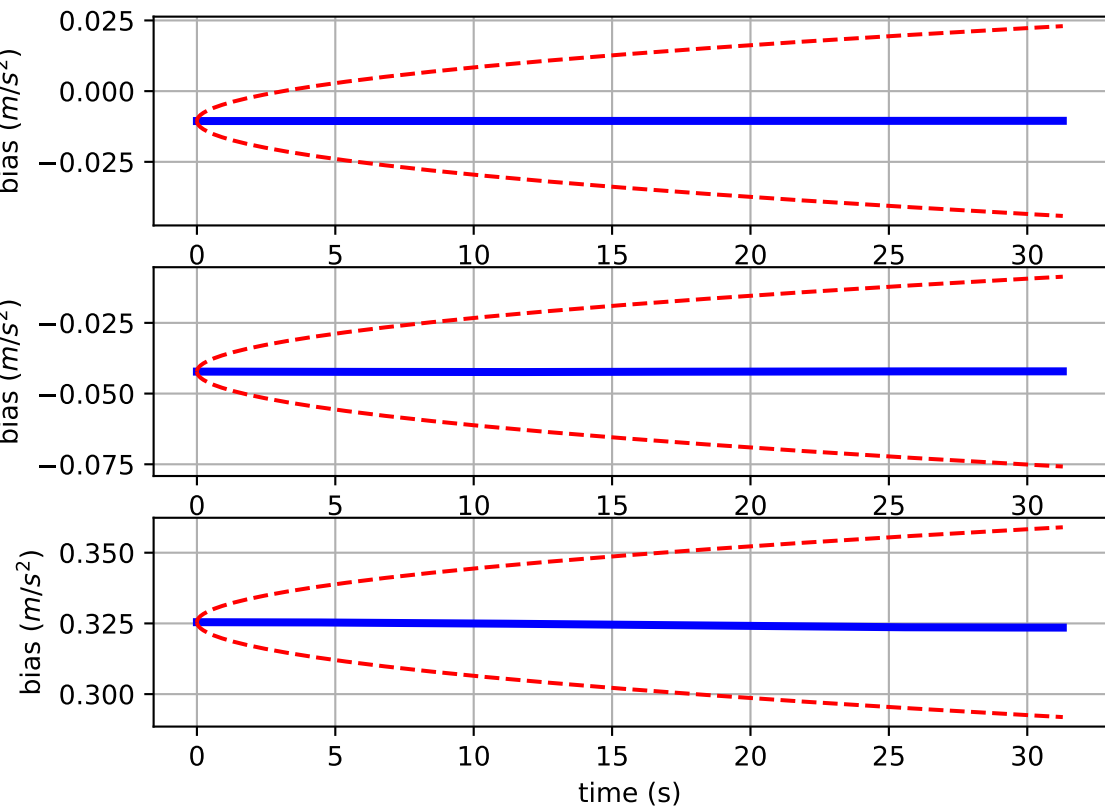
Comparison of predicted and measured specific force (imu0 frame)



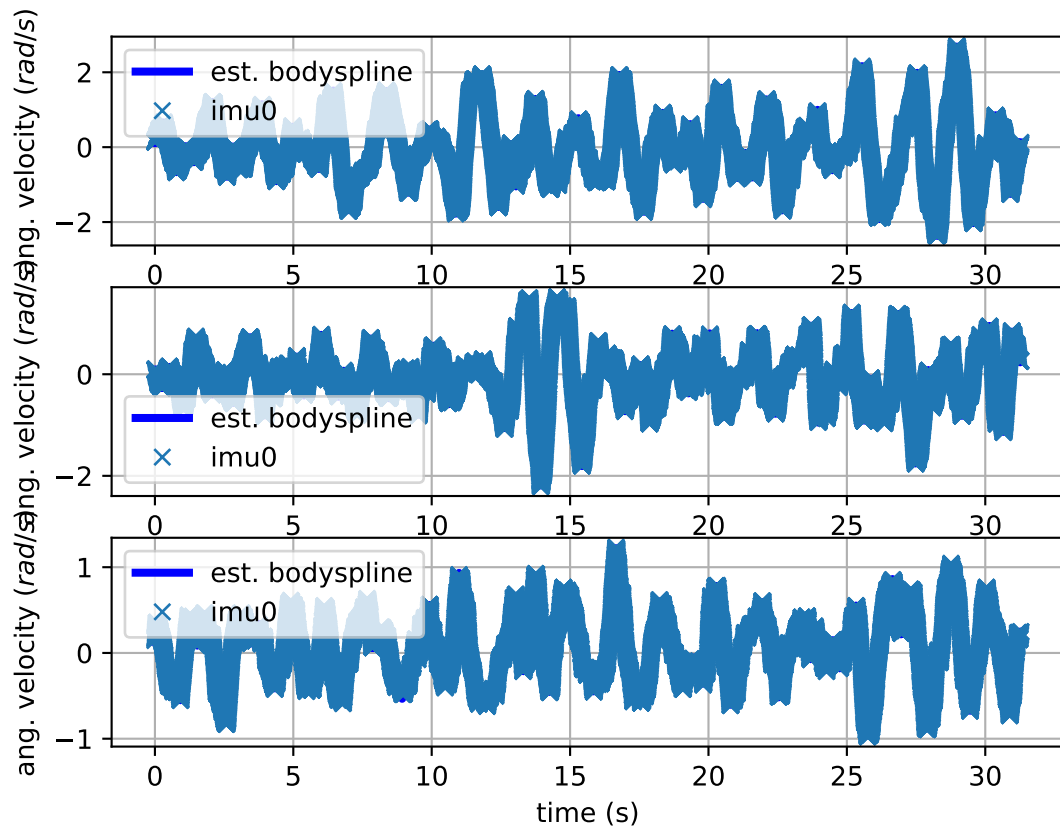
imu0: acceleration error



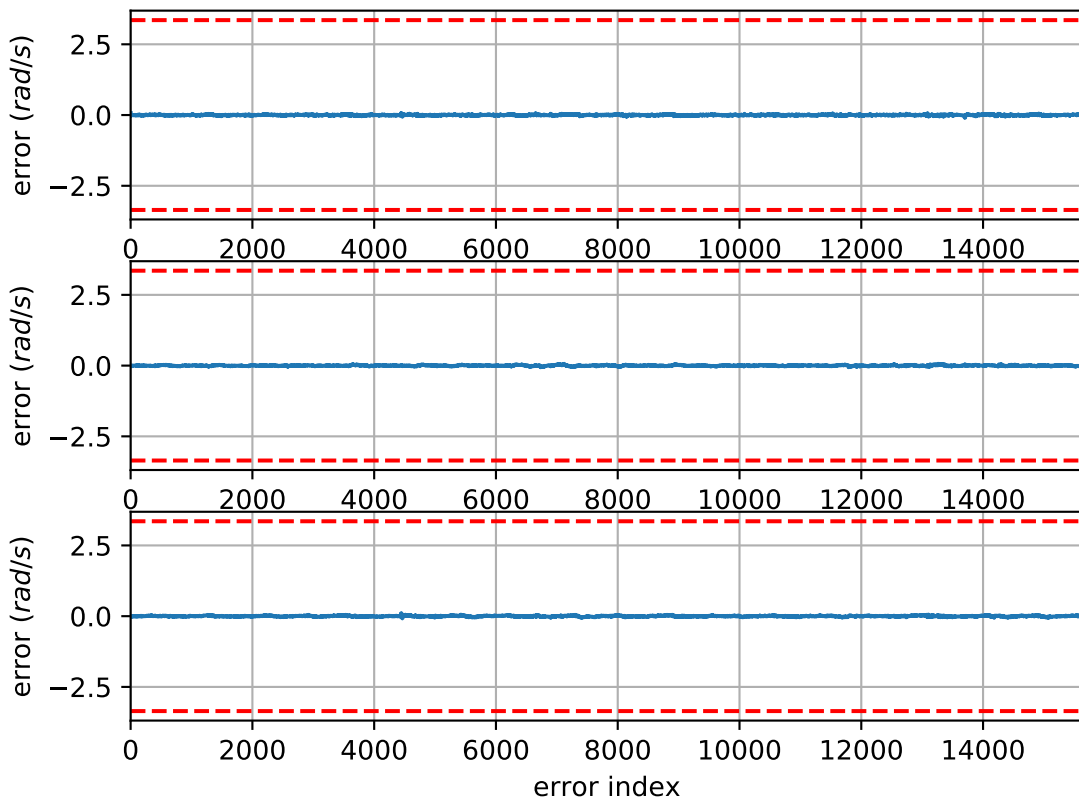
imu0: estimated accelerometer bias (imu frame)



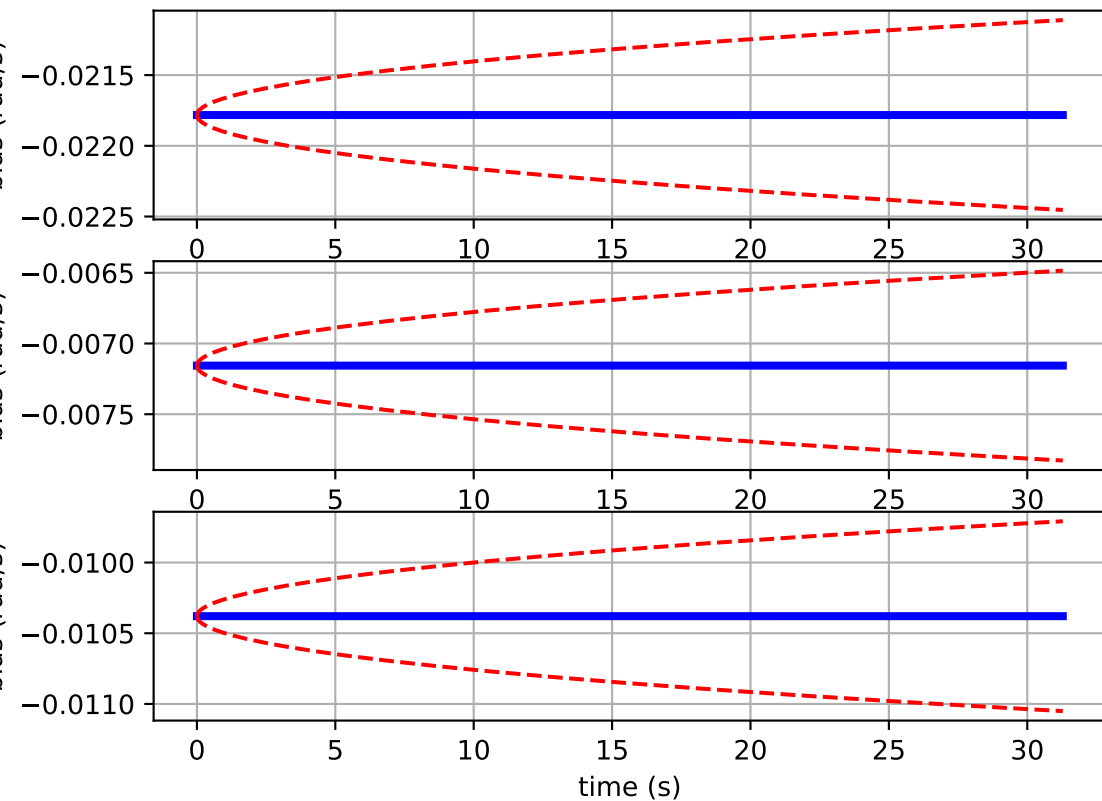
Comparison of predicted and measured angular velocities (body frame)



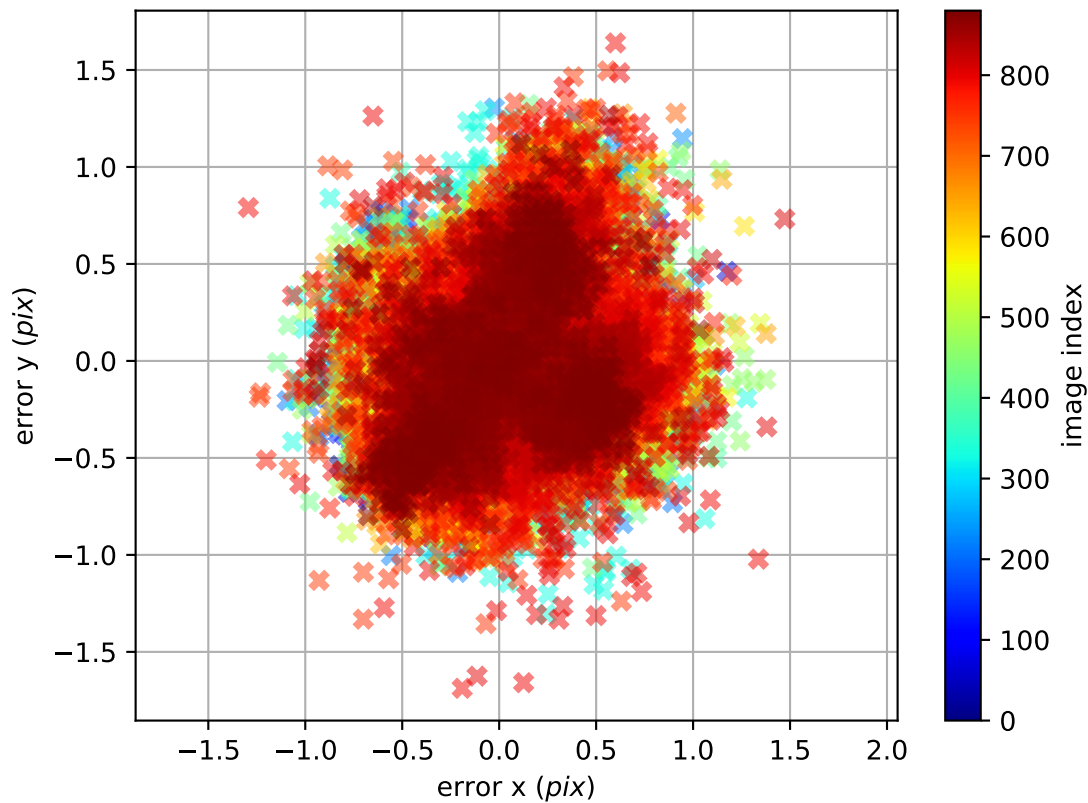
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

