

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.296398007864, median 0.232947583163, std: 0.386701869228
Reprojection error (cam1): mean 0.332911028413, median 0.305771756936, std: 0.215494885017
Gyroscope error (imu0): mean 0.157233326713, median 0.117946078951, std: 0.148682354428
Accelerometer error (imu0): mean 0.208960860024, median 0.179029377741, std: 0.157226928129

Residuals

Reprojection error (cam0) [px]: mean 0.296398007864, median 0.232947583163, std: 0.386701869228
Reprojection error (cam1) [px]: mean 0.332911028413, median 0.305771756936, std: 0.215494885017
Gyroscope error (imu0) [rad/s]: mean 0.0158864863079, median 0.0119169950003, std: 0.015022516137
Accelerometer error (imu0) [m/s^2]: mean 0.0390187897095, median 0.0334297515865, std: 0.029358629

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ -0.99906743  0.00363137  0.04302431  0.02977574]
 [ -0.00280693 -0.99981158  0.01920727 -0.00003946]
 [  0.04308595  0.01906859  0.99888938 -0.05058323]
 [  0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[ -0.99906743 -0.00280693  0.04308595  0.03192729]
 [  0.00363137 -0.99981158  0.01906859  0.00081698]
 [  0.04302431  0.01920727  0.99888938  0.04924673]
 [  0.          0.          0.          1.        ]]
```

timeshift cam0 to imu0: [s] ($t_{imu} = t_{cam} + \text{shift}$)
-0.00547532410617

Transformation (cam1):

T_ci: (imu0 to cam1):

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

T_ic: (cam1 to imu0):

```
[[-0.99959917 -0.00533879 0.02780268 0.02738773]
 [ 0.00513735 -0.99996007 -0.0073116 -0.00022577]
 [ 0.0278406 -0.00716584 0.99958669 0.06705105]
 [ 0.      0.      0.      1.      ]]
```

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

0.00166119766549

Baselines:

Baseline (cam0 to cam1):

```
[[ 0.99988345 -0.00179584 -0.01516104 -0.00502806]
 [ 0.00139428 0.99964901 -0.02645574 -0.00093936]
 [ 0.01520322 0.02643152 0.99953501 -0.01767838]
 [ 0.      0.      0.      1.      ]]
```

baseline norm: 0.0184035032126 [m]

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

```
[ 9.69118633 -0.01018792 -1.49974219]
```

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [758.1291471478728, 759.5125594392973]

Principal point: [289.0985666049996, 228.23374237672056]

Distortion model: radtan

Distortion coefficients: [-0.36599825863847607, 0.15566628749131536, 0.003684464282510181, 0.00456

Type: checkerboard

Rows

Count: 7
Distance: 0.07 [m]

cam1

Camera model: pinhole
Focal length: [548.8989250692618, 550.0282089284915]
Principal point: [313.5293514832678, 219.6325753720951]
Distortion model: radtan
Distortion coefficients: [-0.08095806072593555, 0.15743578875760092, -0.0035154416164982195, -0.0035154416164982195, 0.0015006127411146562]
Type: checkerboard
Rows
Count: 6
Distance: 0.07 [m]
Cols
Count: 7
Distance: 0.07 [m]

IMU configuration

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IMU0:

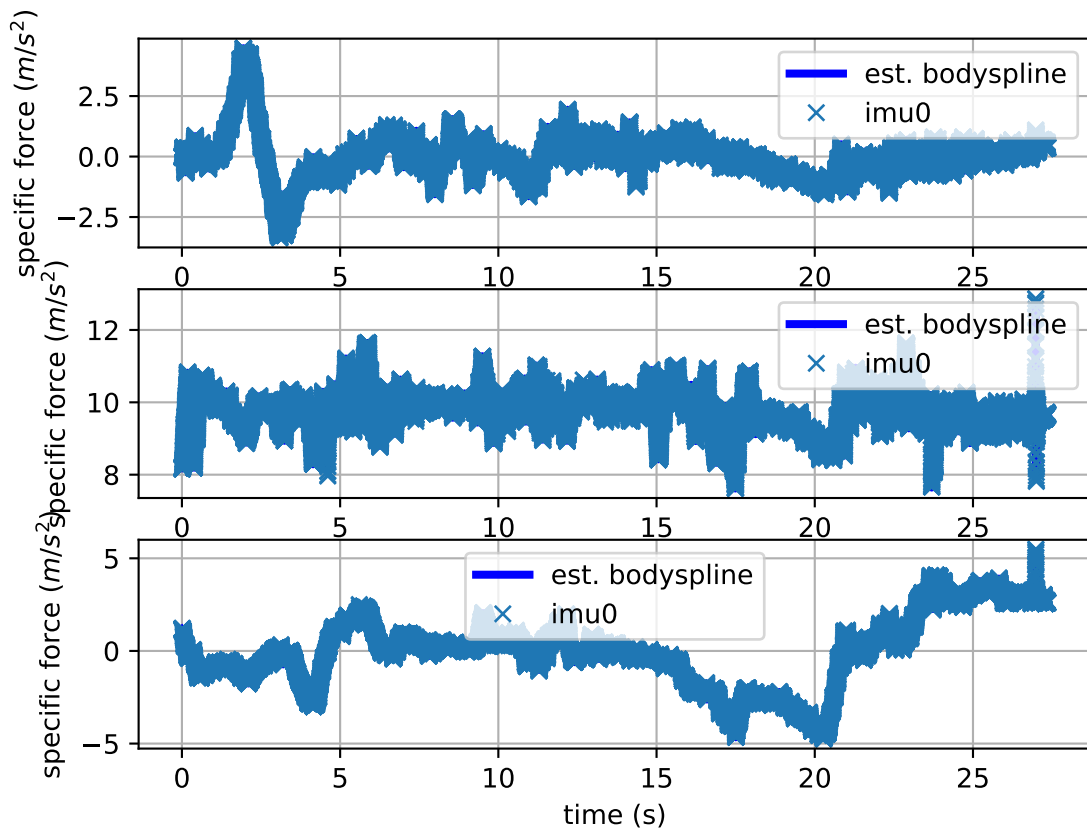
Model: calibrated
Update rate: 1000.0
Accelerometer:
Noise density: 0.00590484969344
Noise density (discrete): 0.186727742722
Random walk: 8.8156994615e-05
Gyroscope:
Noise density: 0.00319509112986
Noise density (discrete): 0.101037653021
Random walk: 3.9937046462e-05

T i b

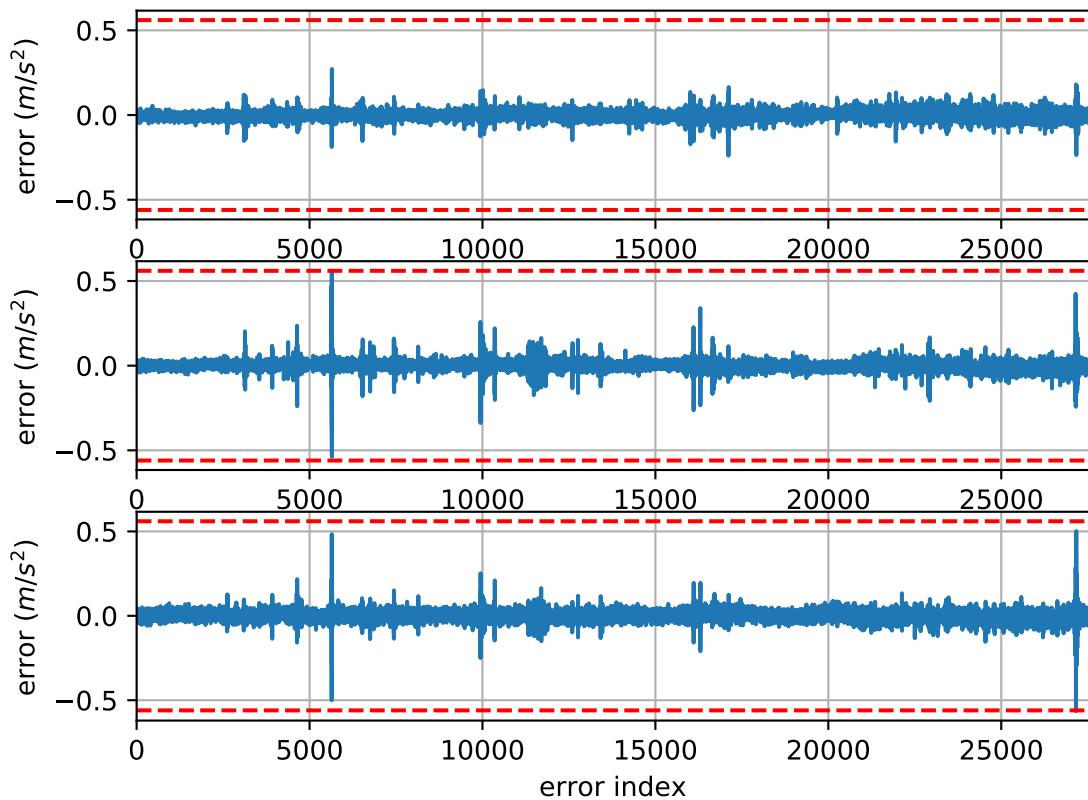
[0. 0. 0. 1.]

time offset with respect to IMU0: 0.0 [s]

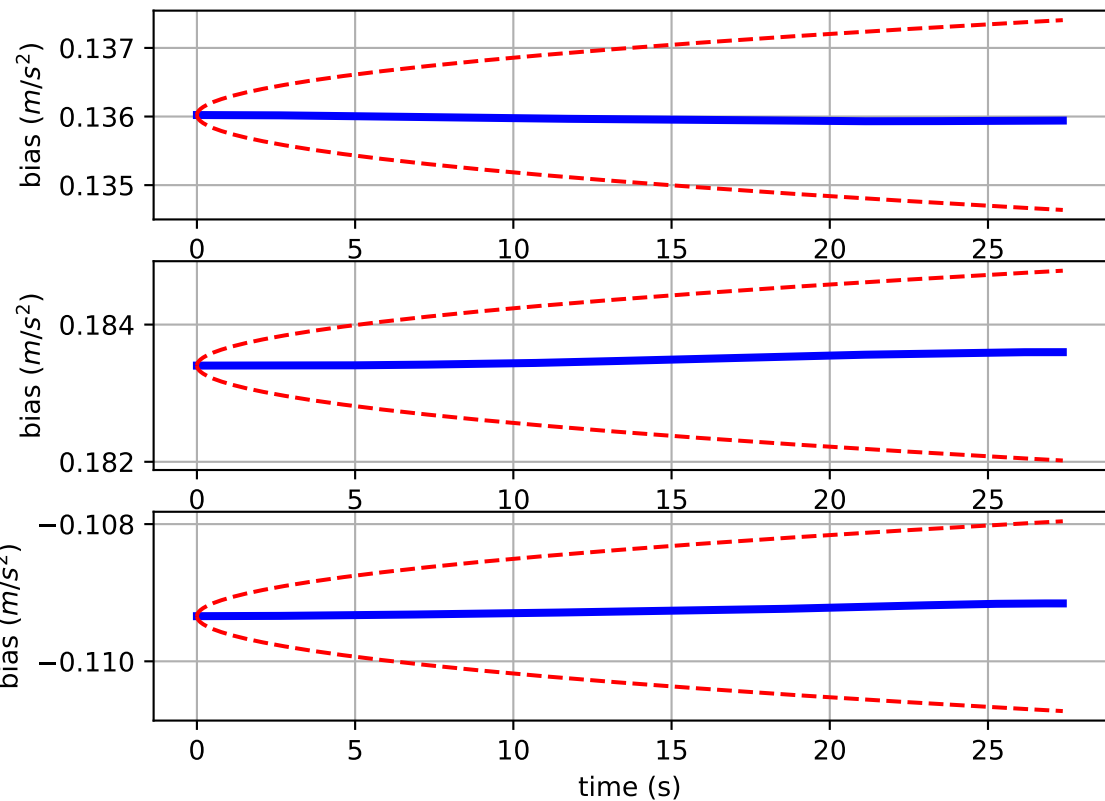
Comparison of predicted and measured specific force (imu0 frame)



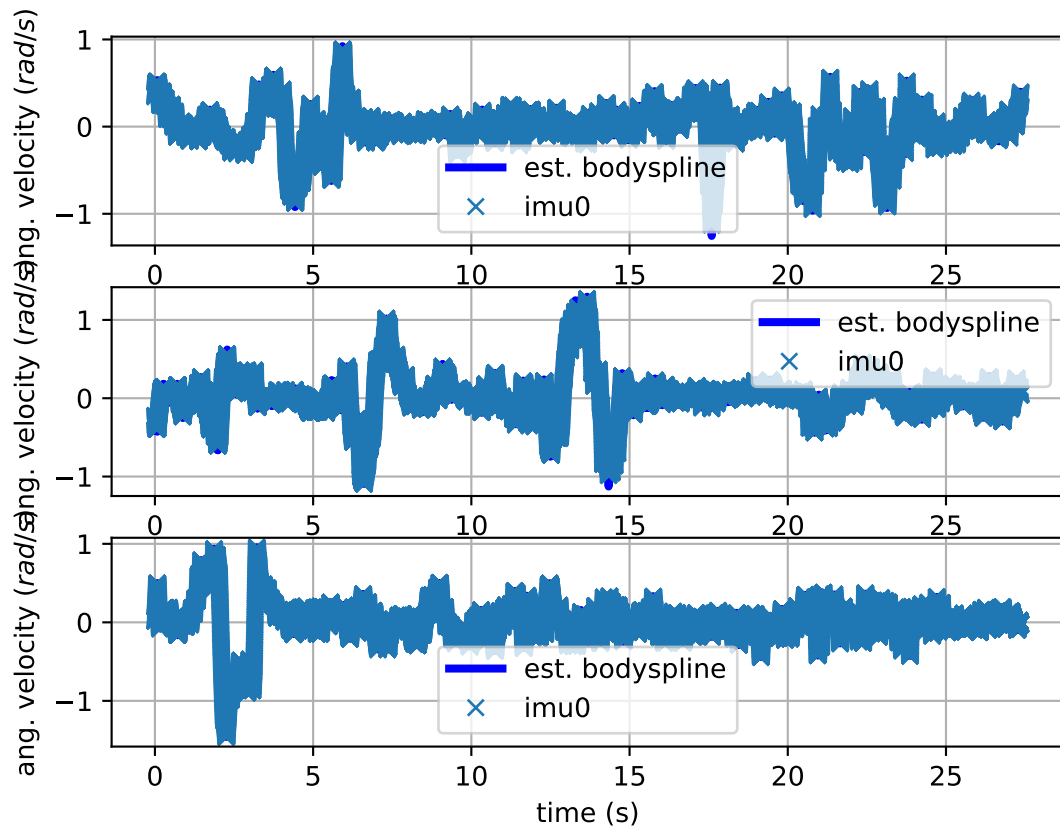
imu0: acceleration error



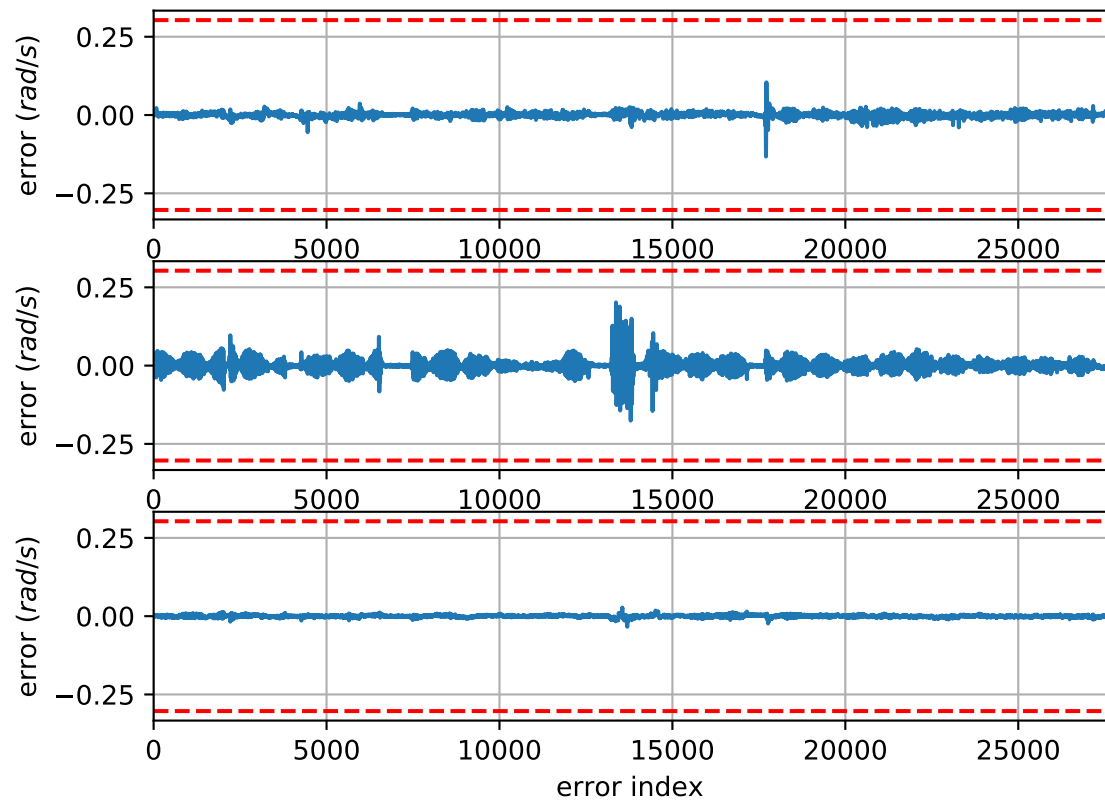
imu0: estimated accelerometer bias (imu frame)



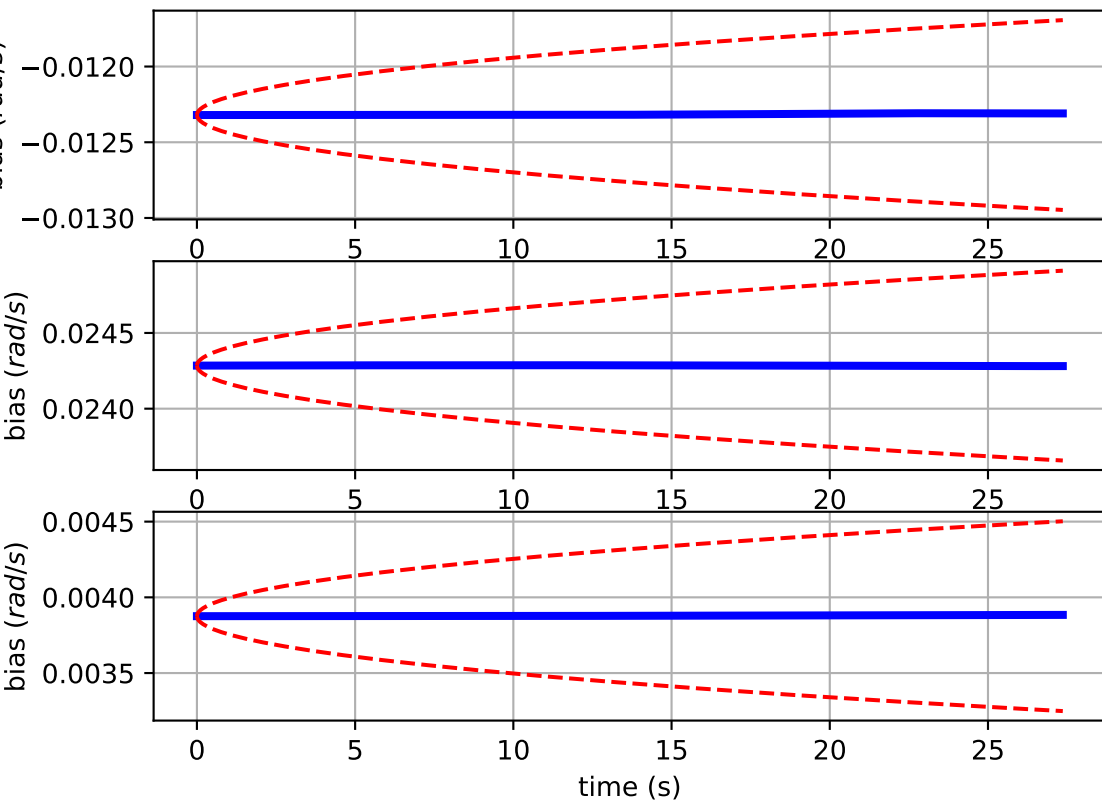
Comparison of predicted and measured angular velocities (body frame)



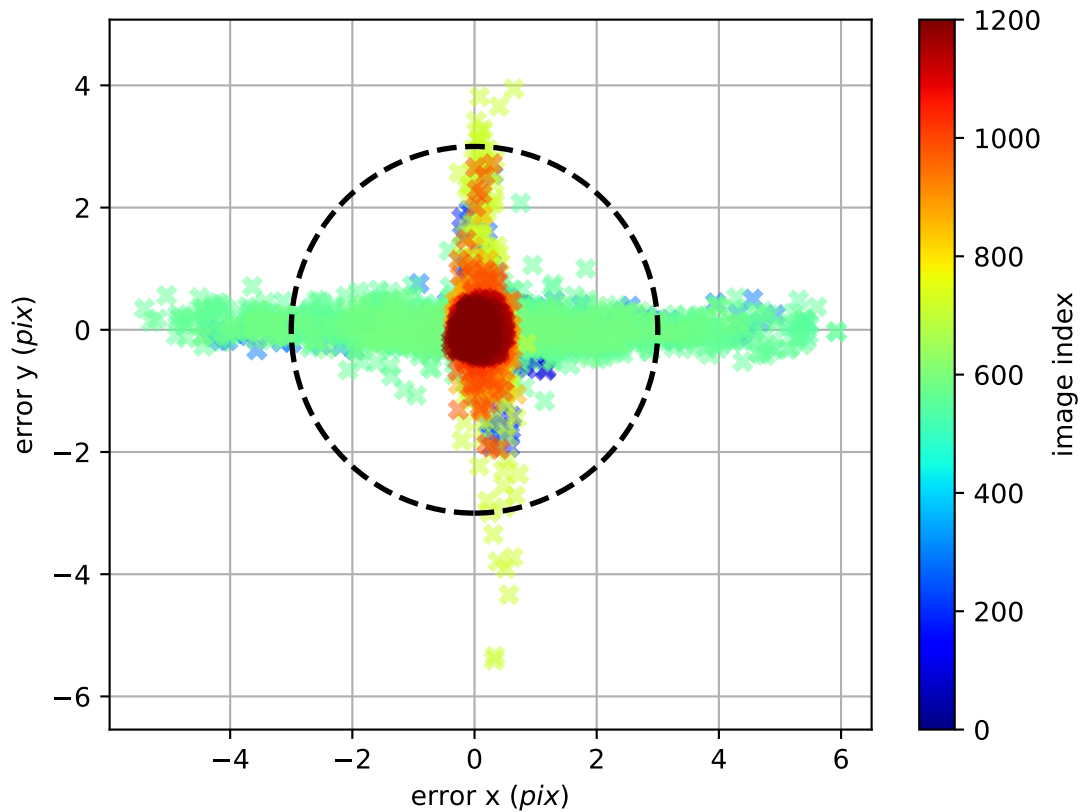
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

