

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 4.039835975158487, median 2.6140771330098302, std: 5.11568634059243
Gyroscope error (imu0): mean 7.916385368173756, median 5.412928782045226, std: 8.595513355214612
Accelerometer error (imu0): mean 3.553124636176496, median 2.490889531808313, std: 5.565134393349268

Residuals

Reprojection error (cam0) [px]: mean 4.039835975158487, median 2.6140771330098302, std: 5.11568634059243
Gyroscope error (imu0) [rad/s]: mean 0.09811144194479877, median 0.06708494132764459, std: 0.10652819062172908
Accelerometer error (imu0) [m/s^2]: mean 0.890219830841968, median 0.6240814732687237, std: 1.3943200719216513

Transformation (cam0):

T_ci: (imu0 to cam0):
[[0.07511099 -0.98615302 0.14785319 -0.00748418]
[0.39285285 0.16554462 0.90457814 0.02365234]
[-0.91652876 -0.00985921 0.39984725 -0.0880334]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):
[[0.07511099 0.39285285 -0.91652876 -0.08941489]
[-0.98615302 0.16554462 -0.00985921 -0.01216401]
[0.14785319 0.90457814 0.39984725 0.01491108]
[0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
0.644221742932939

Gravity vector in target coords: [m/s^2]
[1.37755551 -9.18320851 3.15268856]

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [843.858052071779, 845.4261458999864]

Principal point: [642.0304338748831, 344.2220673496408]

Distortion model: radtan

Distortion coefficients: [-0.3649776105434452, 0.1067357069563635, 0.002984420877562965, -0.002477954123125047]

Type: aprilgrid

Tags:

Rows: 3

Cols: 3

Size: 0.04848 [m]

Spacing 0.009982032 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 400.0

Accelerometer:

Noise density: 0.012527281224223114

Noise density (discrete): 0.25054562448446227

Random walk: 0.00025426635923104466

Gyroscope:

Noise density: 0.0006196732307855818

Noise density (discrete): 0.012393464615711634

Random walk: 2.3521917733701375e-05

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

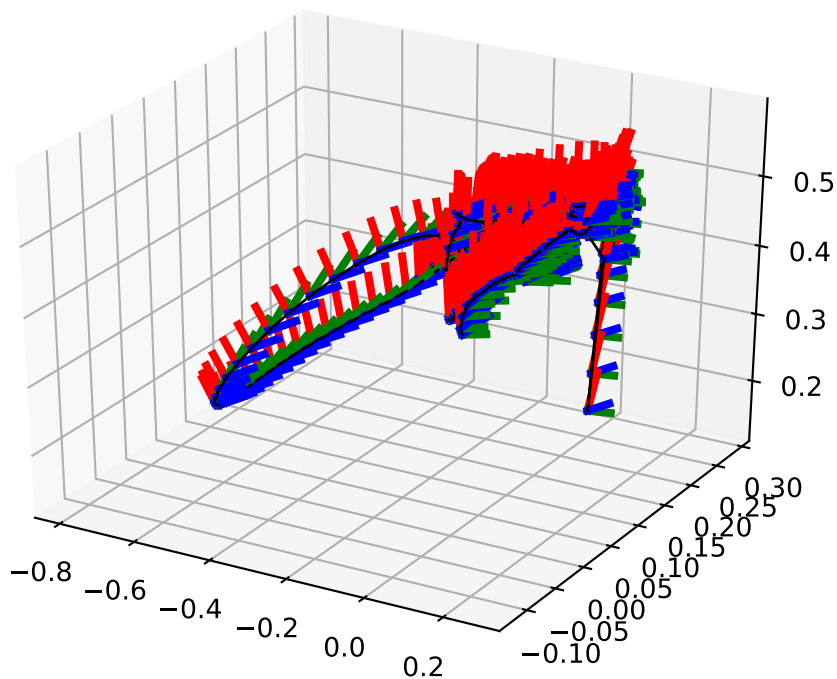
[0. 1. 0. 0.]

[0. 0. 1. 0.]

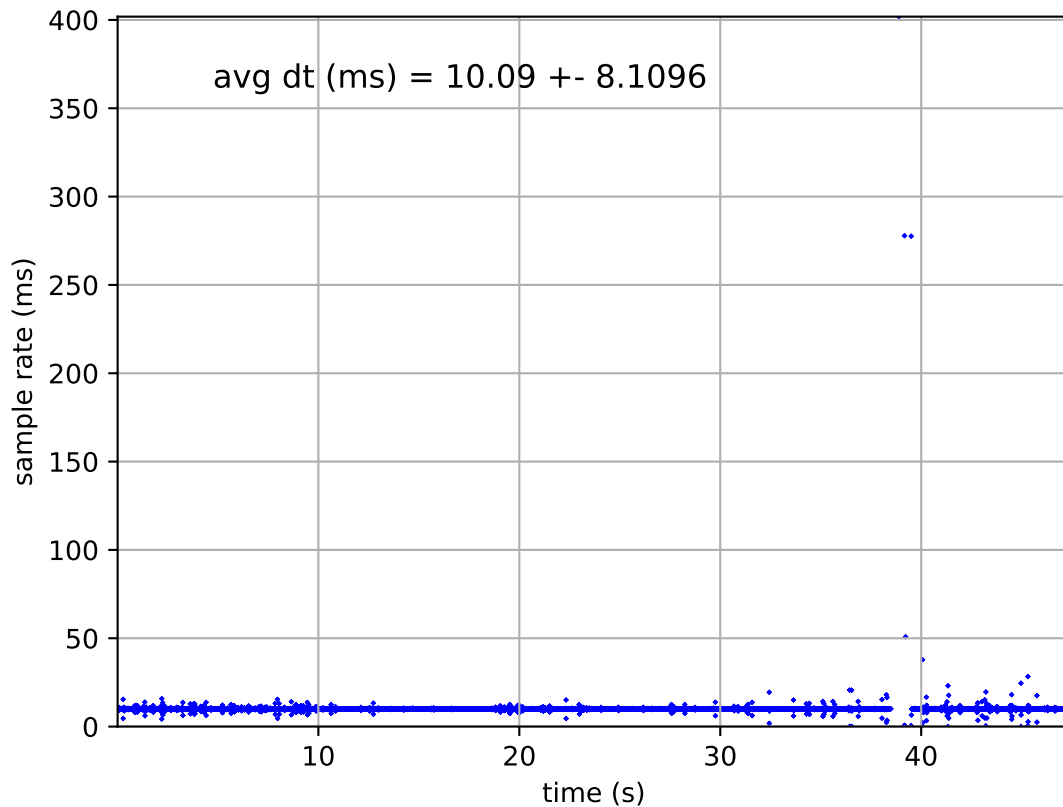
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

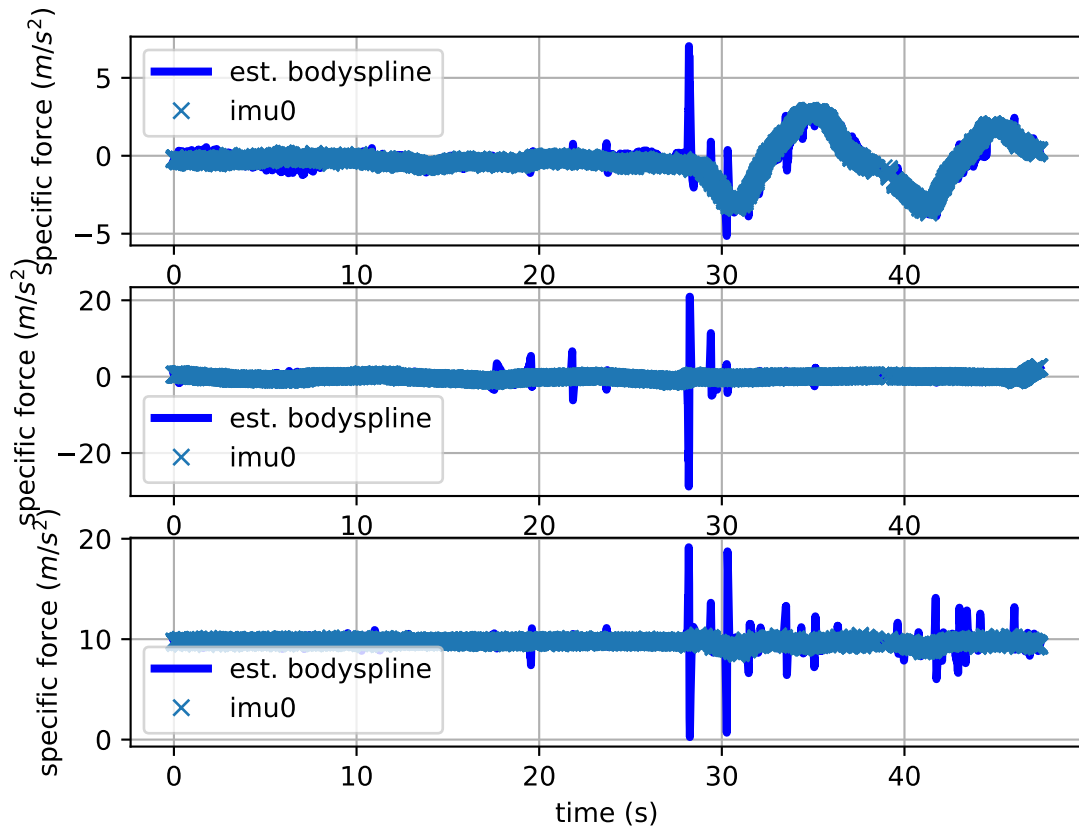
imu0: estimated poses



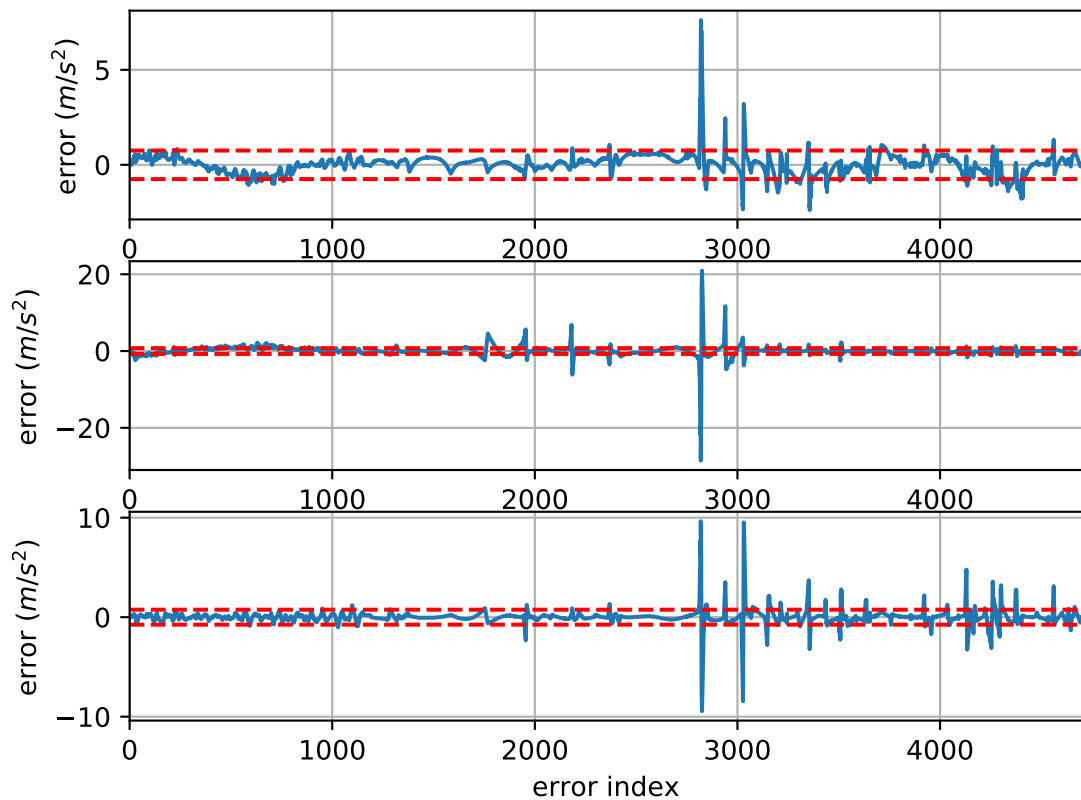
imu0: sample inertial rate



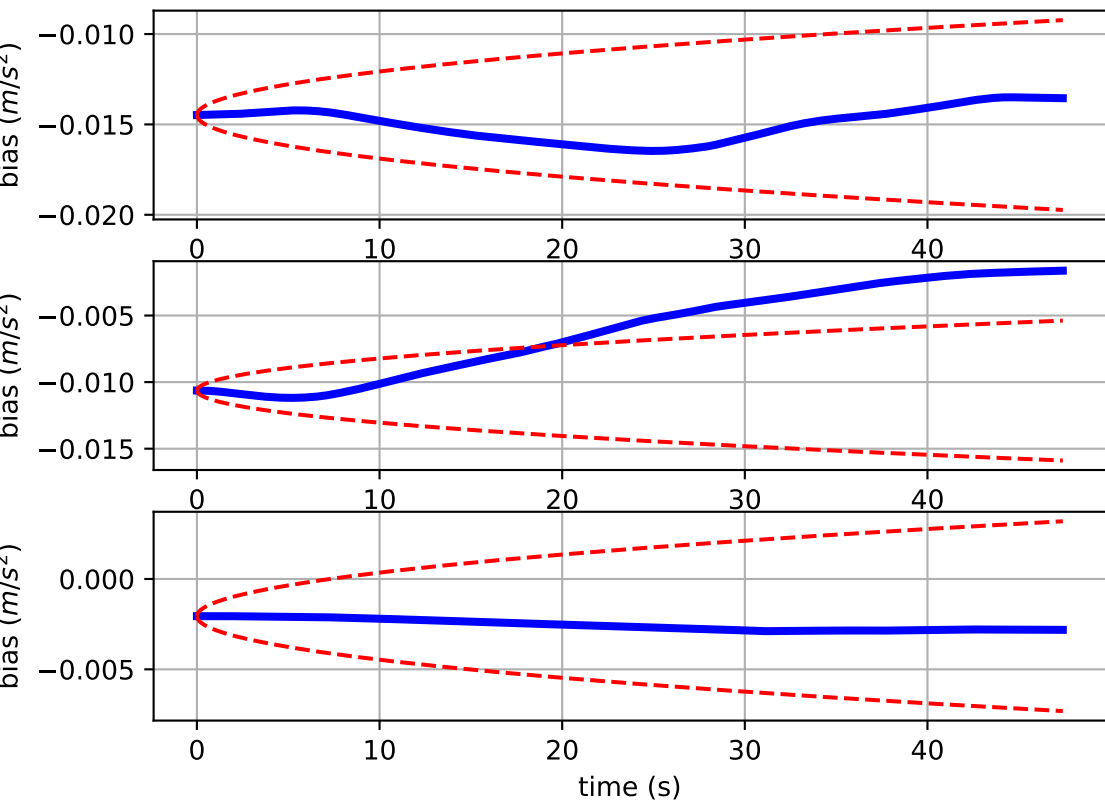
Comparison of predicted and measured specific force (imu0 frame)



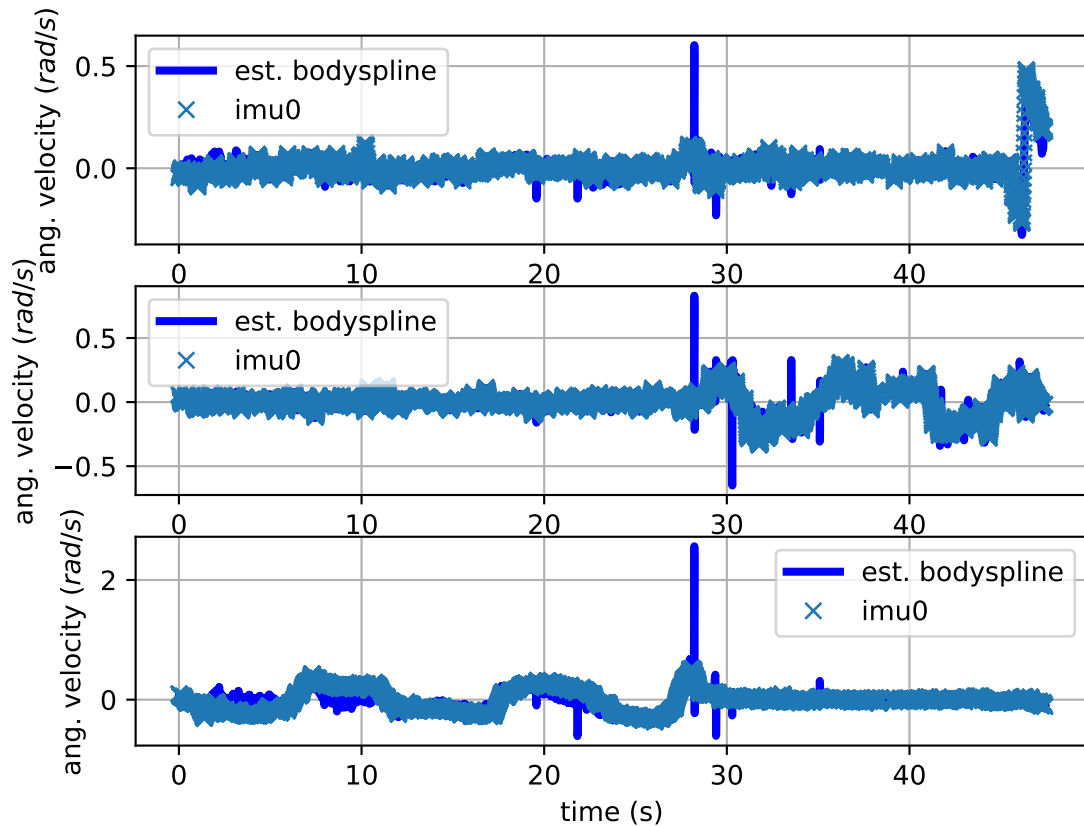
imu0: acceleration error



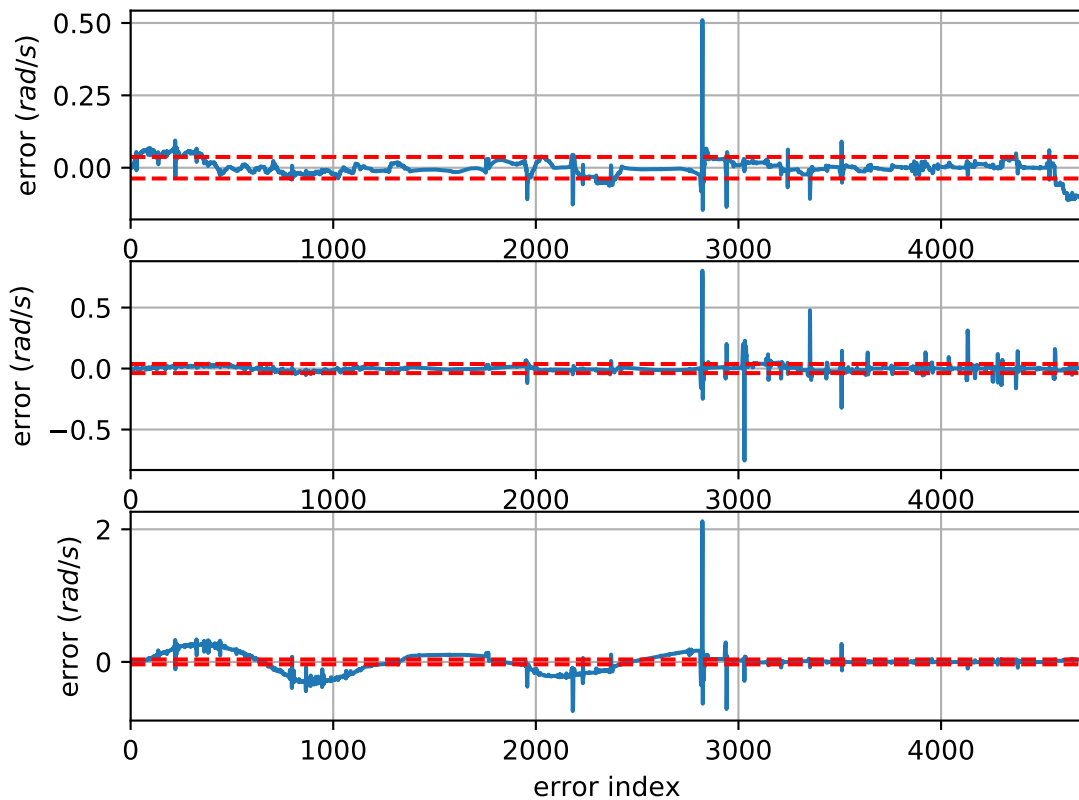
imu0: estimated accelerometer bias (imu frame)



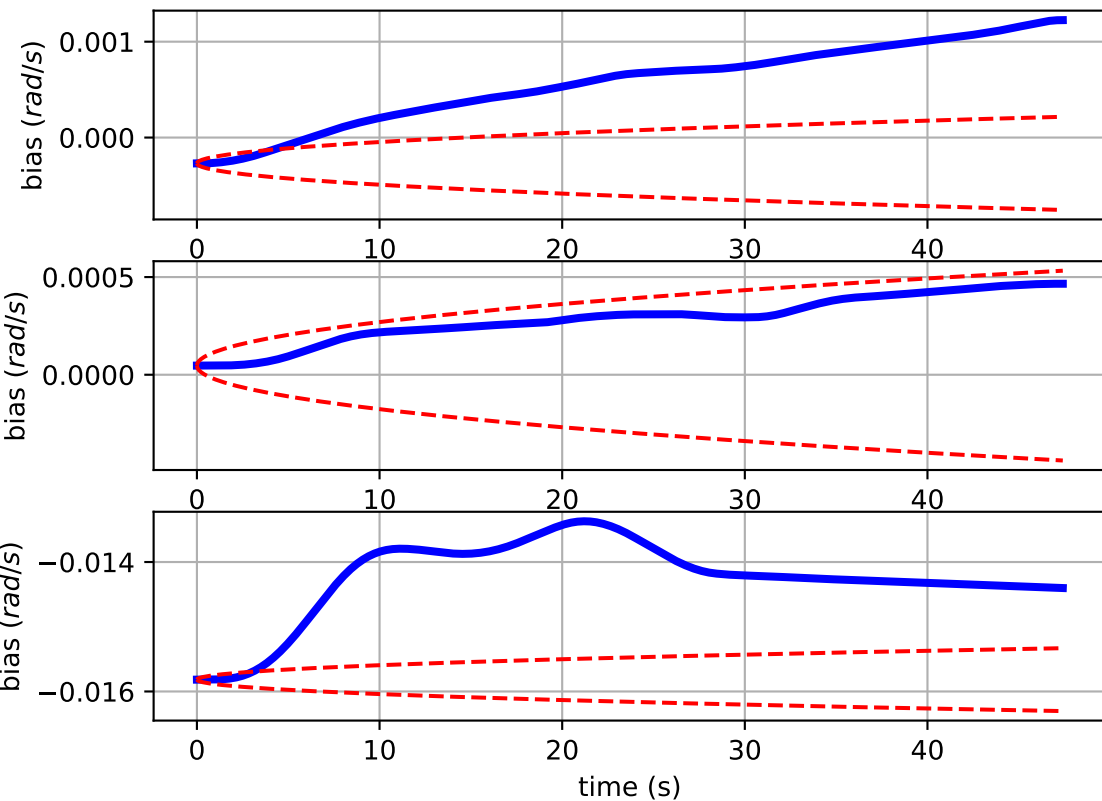
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

