

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.28190887044, median 0.261781990919, std: 0.150353424589
Gyroscope error (imu0): mean 0.0756153499539, median 0.0750907798829, std: 0.0356726866828
Accelerometer error (imu0): mean 0.116747224694, median 0.0878889972051, std: 0.084281410171

Residuals

Reprojection error (cam0) [px]: mean 0.28190887044, median 0.261781990919, std: 0.150353424589
Gyroscope error (imu0) [rad/s]: mean 0.000256638497743, median 0.000254858106923, std: 0.00012107
Accelerometer error (imu0) [m/s²]: mean 0.00466988898774, median 0.0035155598882, std: 0.00337125

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.03555944 0.98846498 0.14721587 -0.06536948]
[0.04446156 -0.14872795 0.98787811 -0.08369224]
[0.99837803 -0.02858294 -0.04923738 0.01336676]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.03555944 0.04446156 0.99837803 -0.00729949]
[0.98846498 -0.14872795 -0.02858294 0.05255012]
[0.14721587 0.98787811 -0.04923738 0.09295931]
[0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
0.005610315719371246

Gravity vector in target coords: [m/s²]
[9.80646476 0.0009991 0.04087615]

Calibration configuration

Camera model: pinhole
Focal length: [561.66641385, 559.55436565]
Principal point: [323.63252981, 235.68826638]
Distortion model: radtan
Distortion coefficients: [0.04793916, -0.43581675, -0.00221563, 0.002124]
Type: checkerboard
Rows
 Count: 7
 Distance: 0.07 [m]
Cols
 Count: 6
 Distance: 0.07 [m]

IMU configuration

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IMU0:

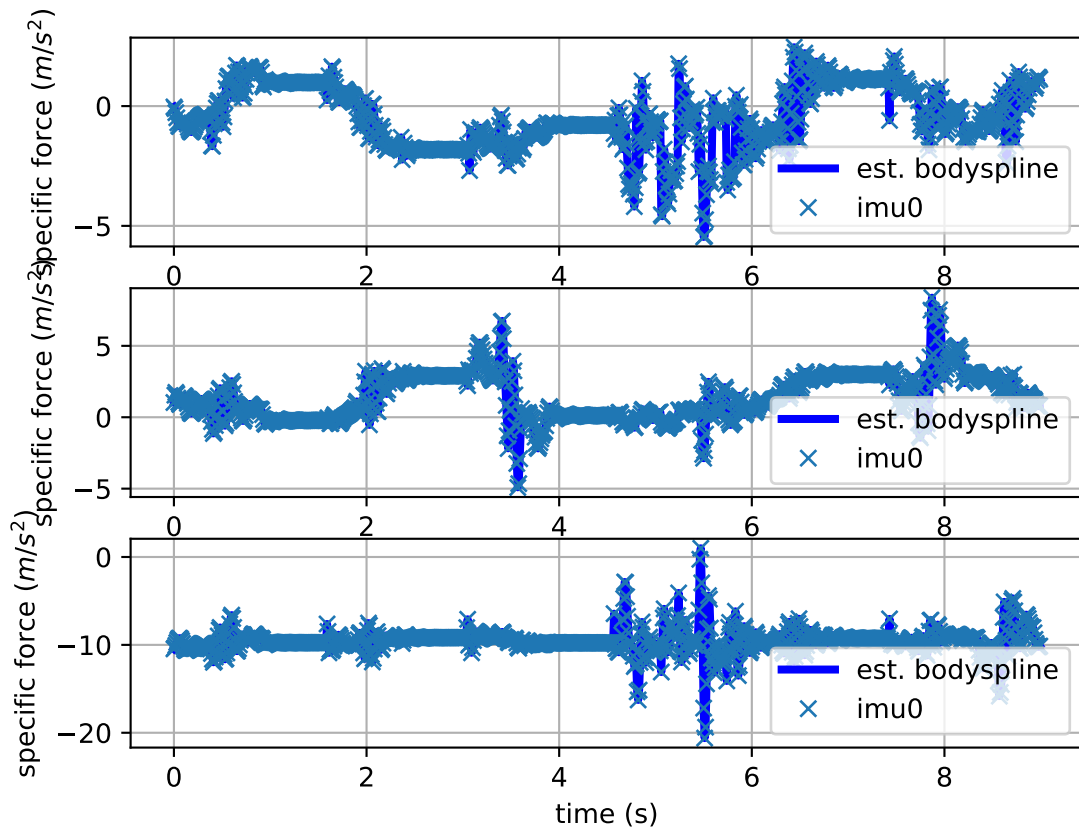
Model: calibrated
Update rate: 100.0
Accelerometer:
 Noise density: 0.004
 Noise density (discrete): 0.04
 Random walk: 0.006
Gyroscope:
 Noise density: 0.0003394
 Noise density (discrete): 0.003394
 Random walk: 3.8785e-05

T_i_b

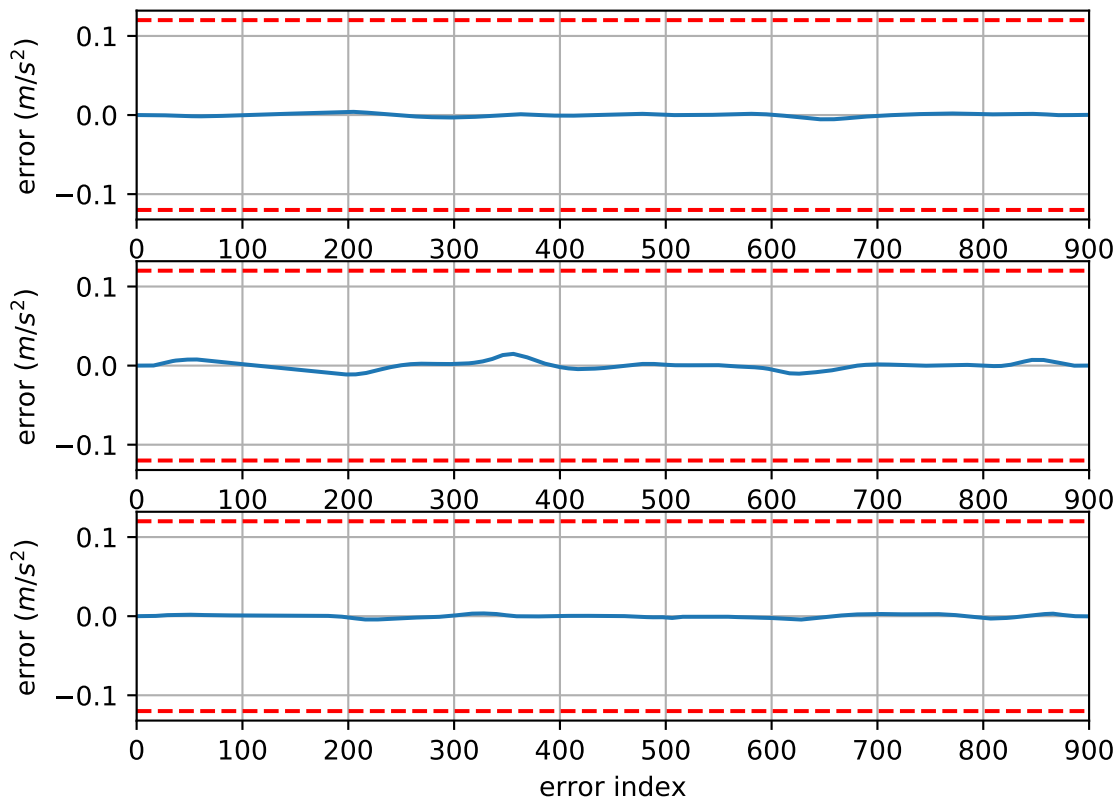
[[1. 0. 0. 0.]
[0. 1. 0. 0.]
[0. 0. 1. 0.]
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

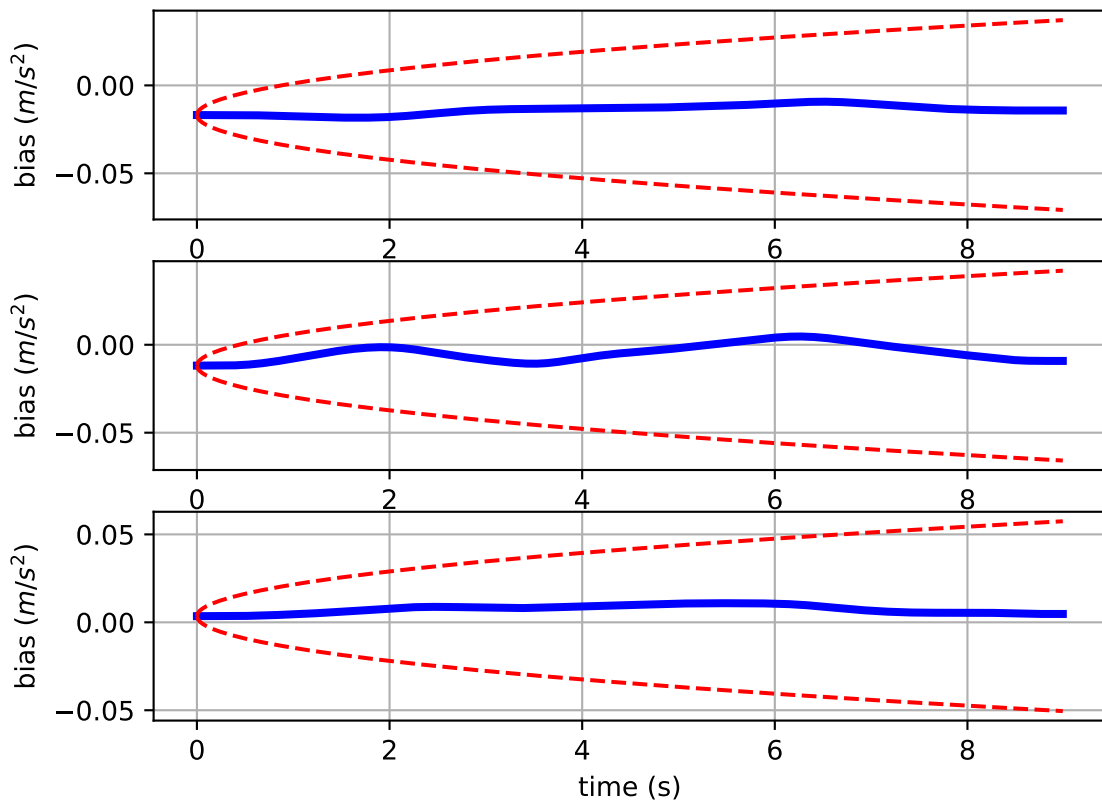
Comparison of predicted and measured specific force (imu0 frame)



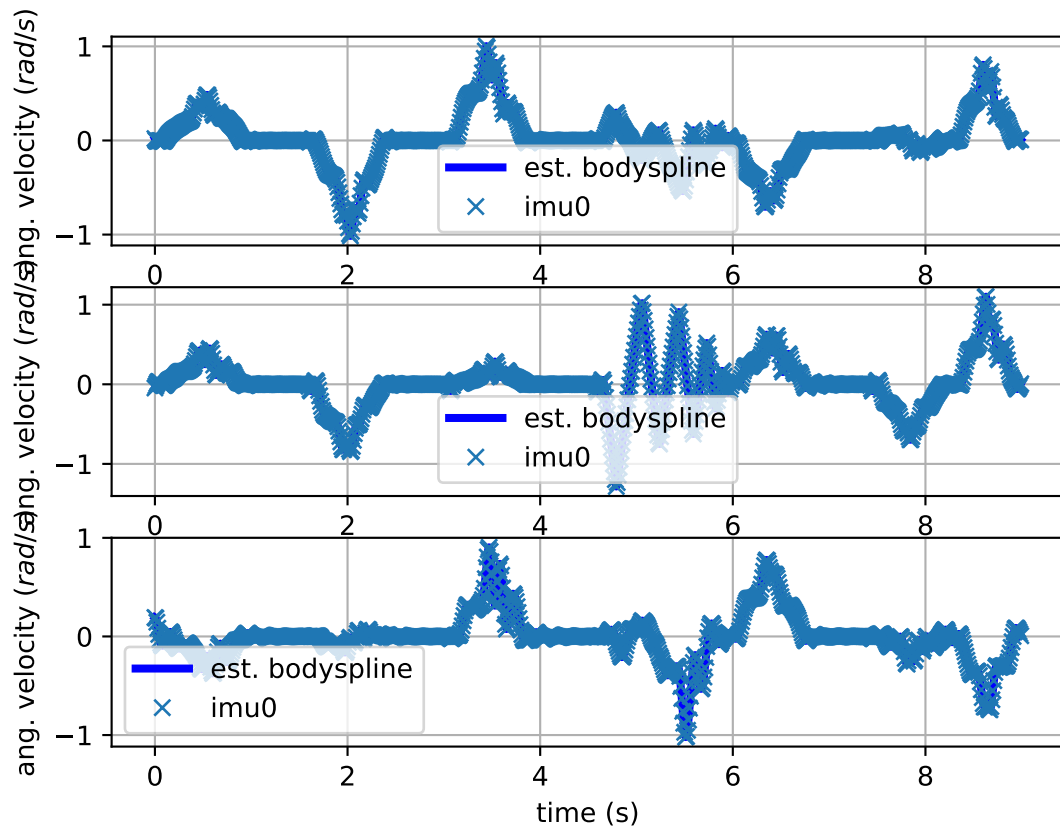
imu0: acceleration error



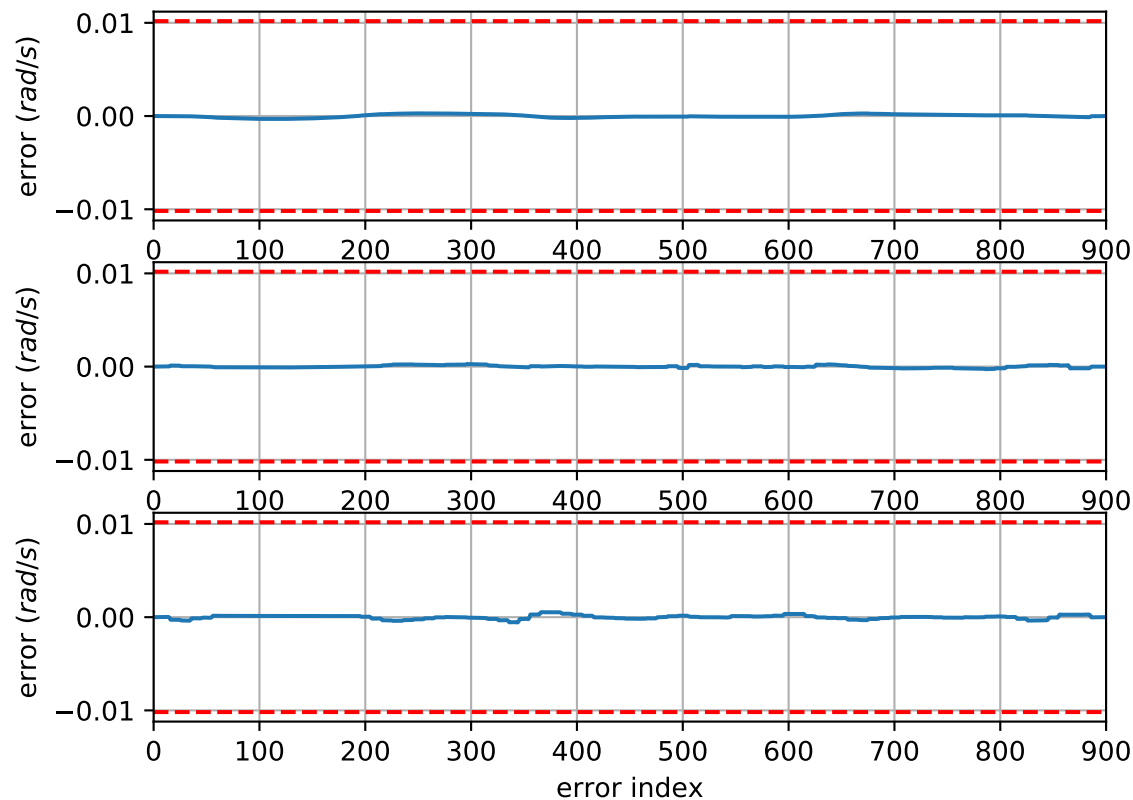
imu0: estimated accelerometer bias (imu frame)



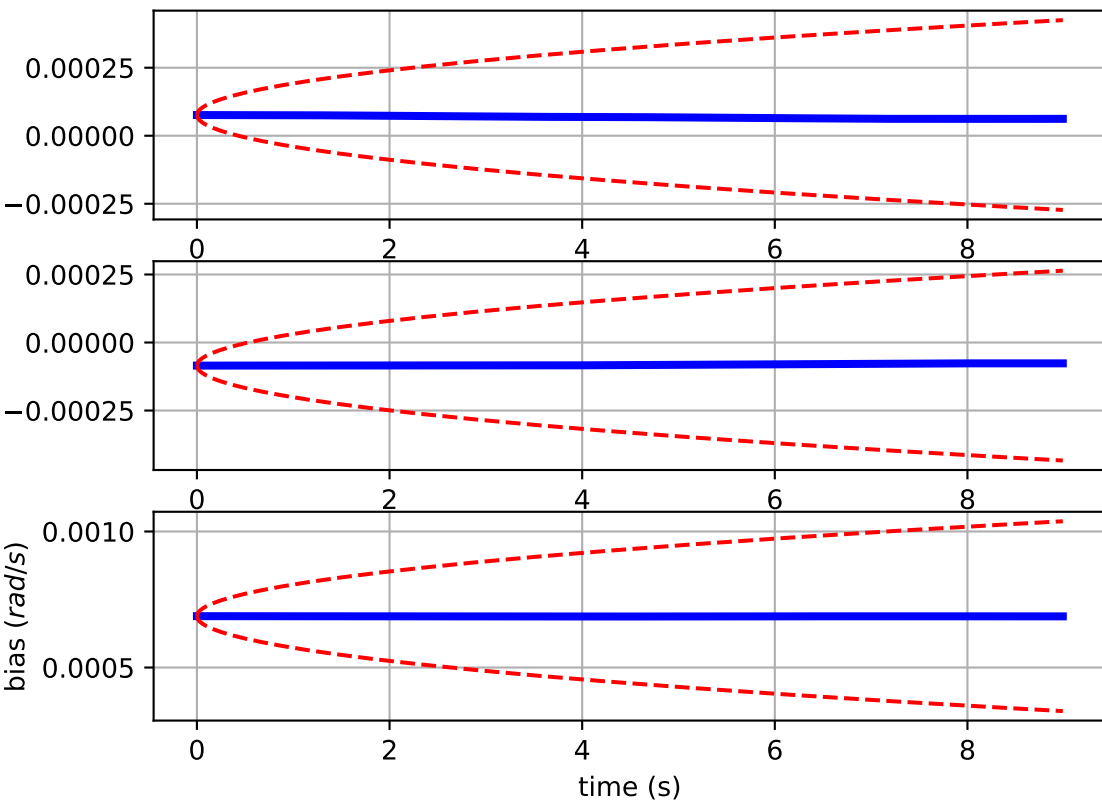
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

