

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.0845125054842, median 0.0793267922771, std: 0.0436496177151
Gyroscope error (imu0): mean 0.0552407400878, median 0.0447636604058, std: 0.0395366690083
Accelerometer error (imu0): mean 0.148800404821, median 0.126888544685, std: 0.108342530558

Residuals

Reprojection error (cam0) [px]: mean 0.0845125054842, median 0.0793267922771, std: 0.0436496177151
Gyroscope error (imu0) [rad/s]: mean 0.000187487071858, median 0.000151927863417, std: 0.00013418
Accelerometer error (imu0) [m/s²]: mean 0.00595201619285, median 0.00507554178741, std: 0.0043337

Transformation (cam0):

T_ci: (imu0 to cam0):

[[-0.00045549 0.99999886 -0.00144028 -0.06139493]
[-0.00068917 0.00143996 0.99999873 -0.10074312]
[0.99999966 0.00045649 0.00068852 -0.00116349]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[-0.00045549 -0.00068917 0.99999966 0.0010661]
[0.99999886 0.00143996 0.00045649 0.06154046]
[-0.00144028 0.99999873 0.00068852 0.10065537]
[0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
0.005978488532176186

Gravity vector in target coords: [m/s²]

[-0.00764914 9.80654692 -0.00138451]

Calibration configuration

Camera model: pinhole
Focal length: [521.9332, 521.9332]
Principal point: [320.5, 240.5]
Distortion model: radtan
Distortion coefficients: [0.0, 0.0, 0.0, 0.0]
Type: checkerboard
Rows
 Count: 6
 Distance: 0.06 [m]
Cols
 Count: 7
 Distance: 0.06 [m]

IMU configuration

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IMU0:

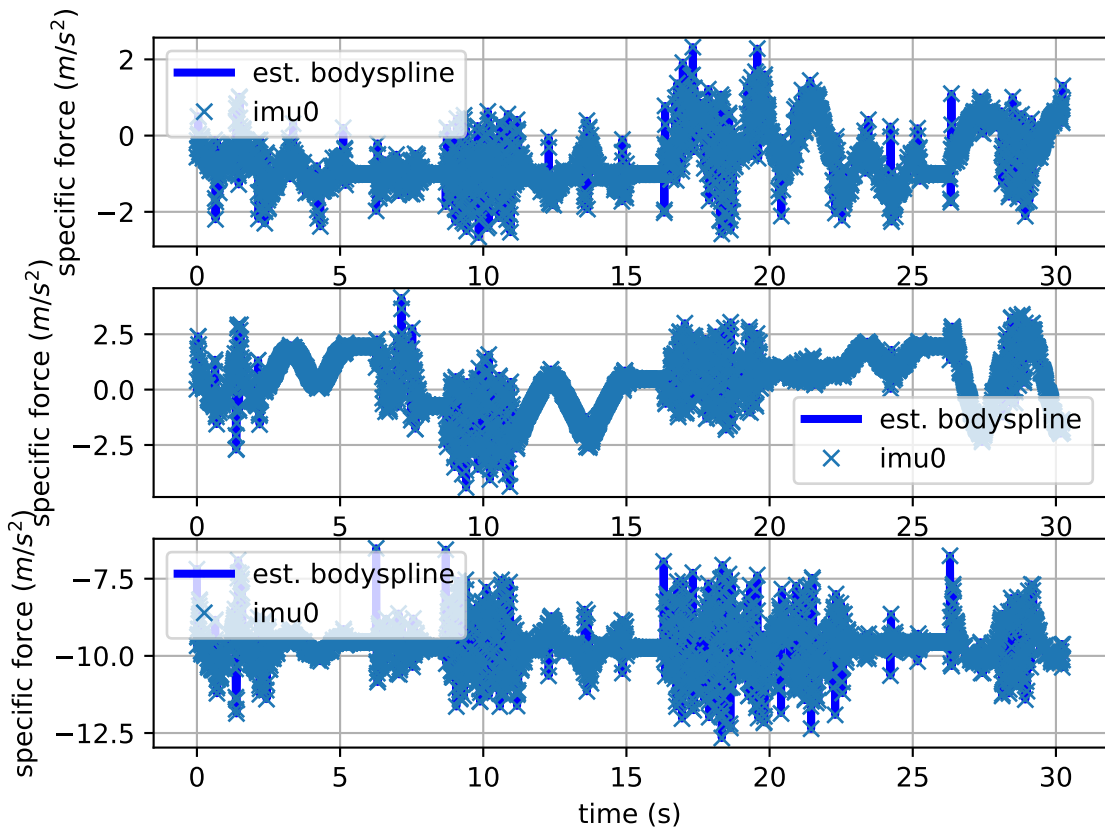
Model: calibrated
Update rate: 100.0
Accelerometer:
 Noise density: 0.004
 Noise density (discrete): 0.04
 Random walk: 0.006
Gyroscope:
 Noise density: 0.0003394
 Noise density (discrete): 0.003394
 Random walk: 3.8785e-05

T_i b

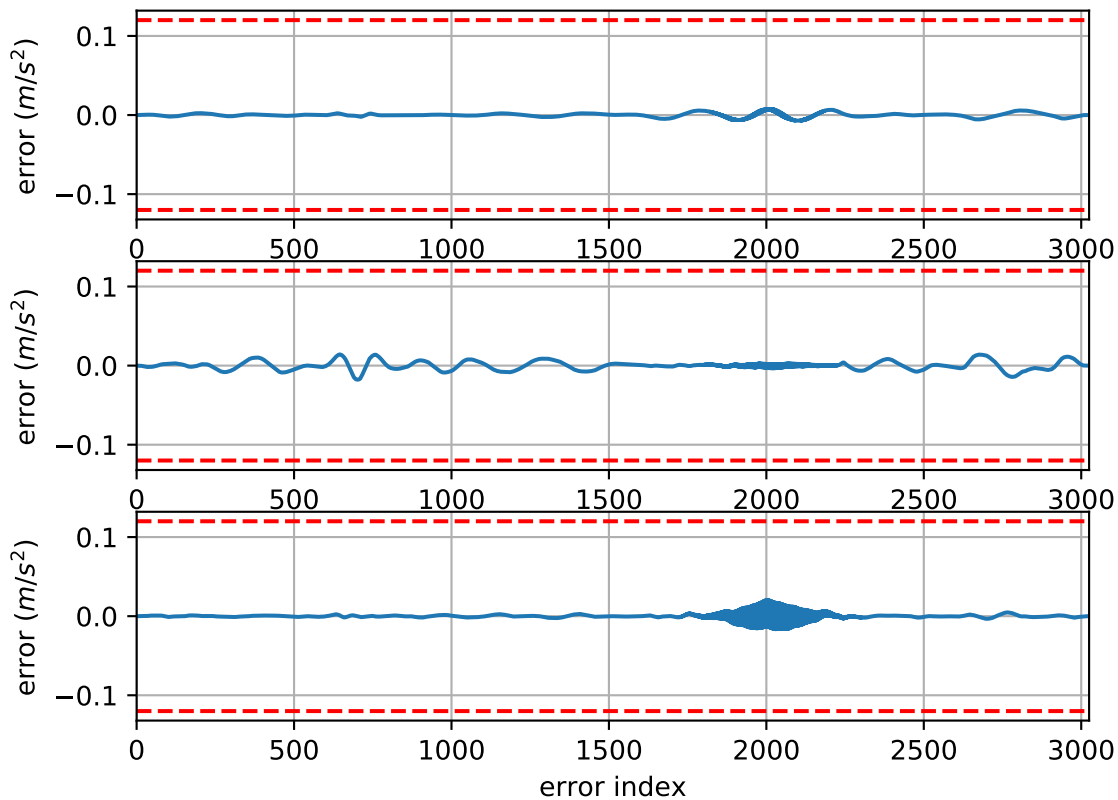
[[1. 0. 0. 0.]
[0. 1. 0. 0.]
[0. 0. 1. 0.]
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

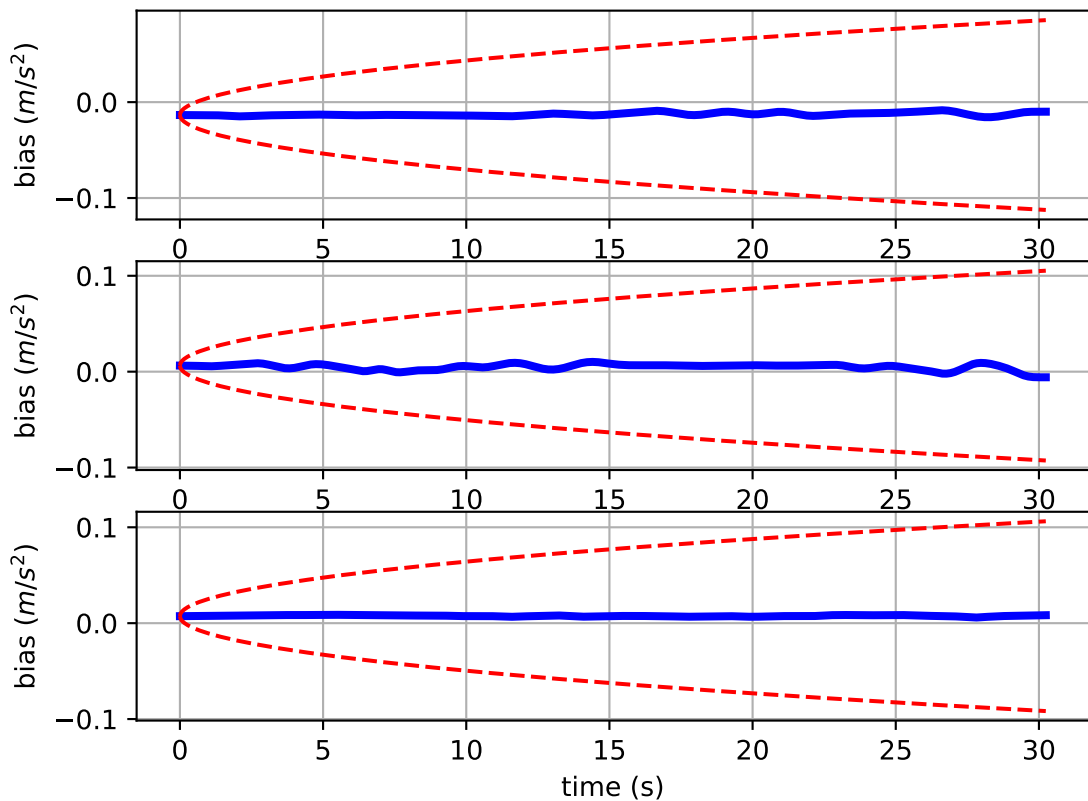
Comparison of predicted and measured specific force (imu0 frame)



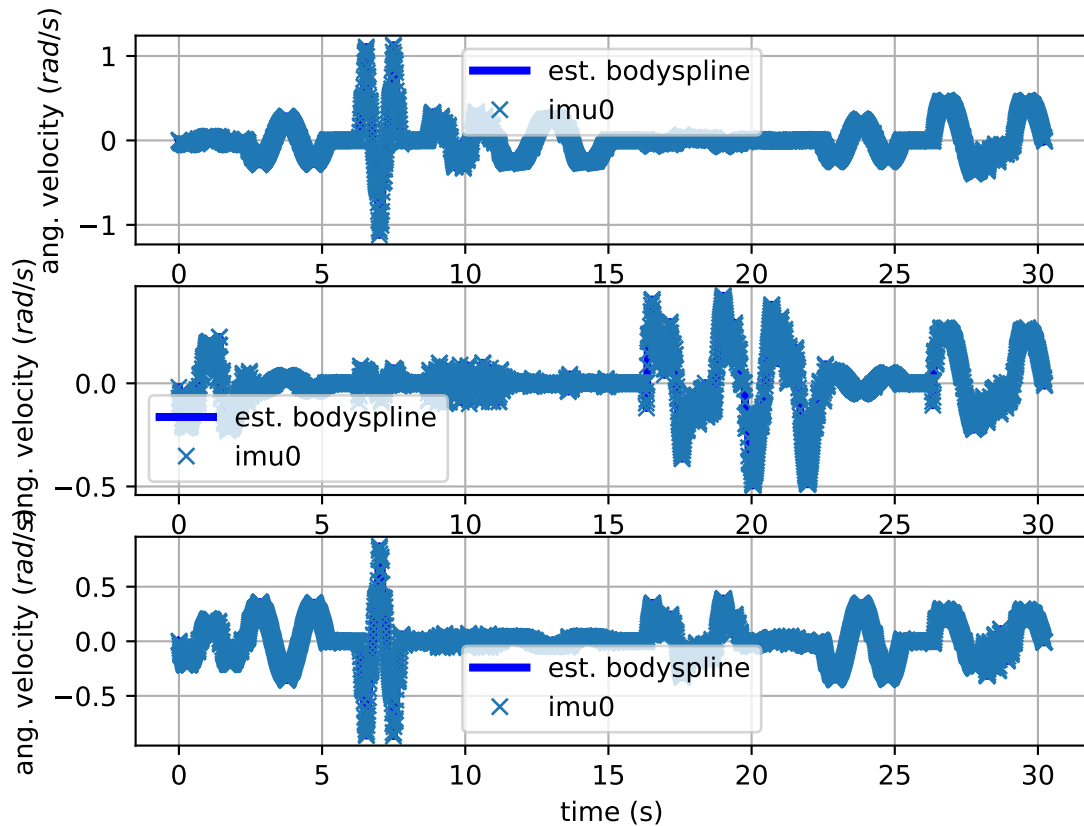
imu0: acceleration error



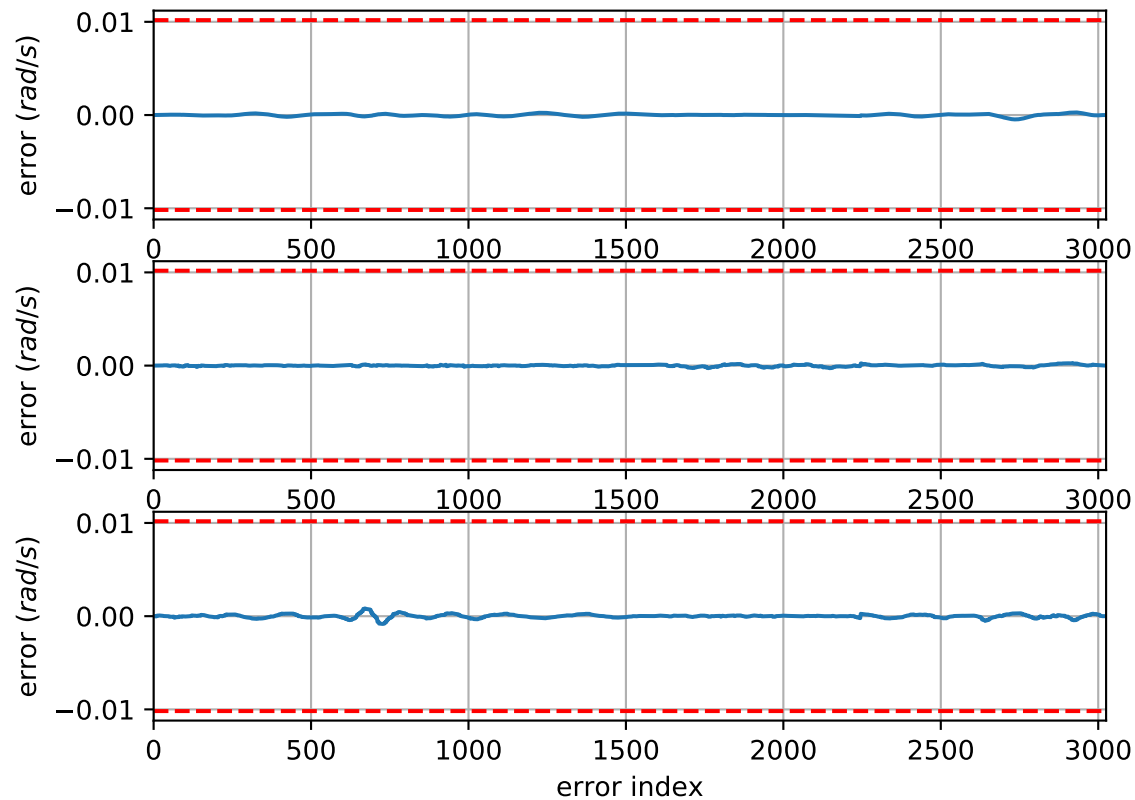
imu0: estimated accelerometer bias (imu frame)



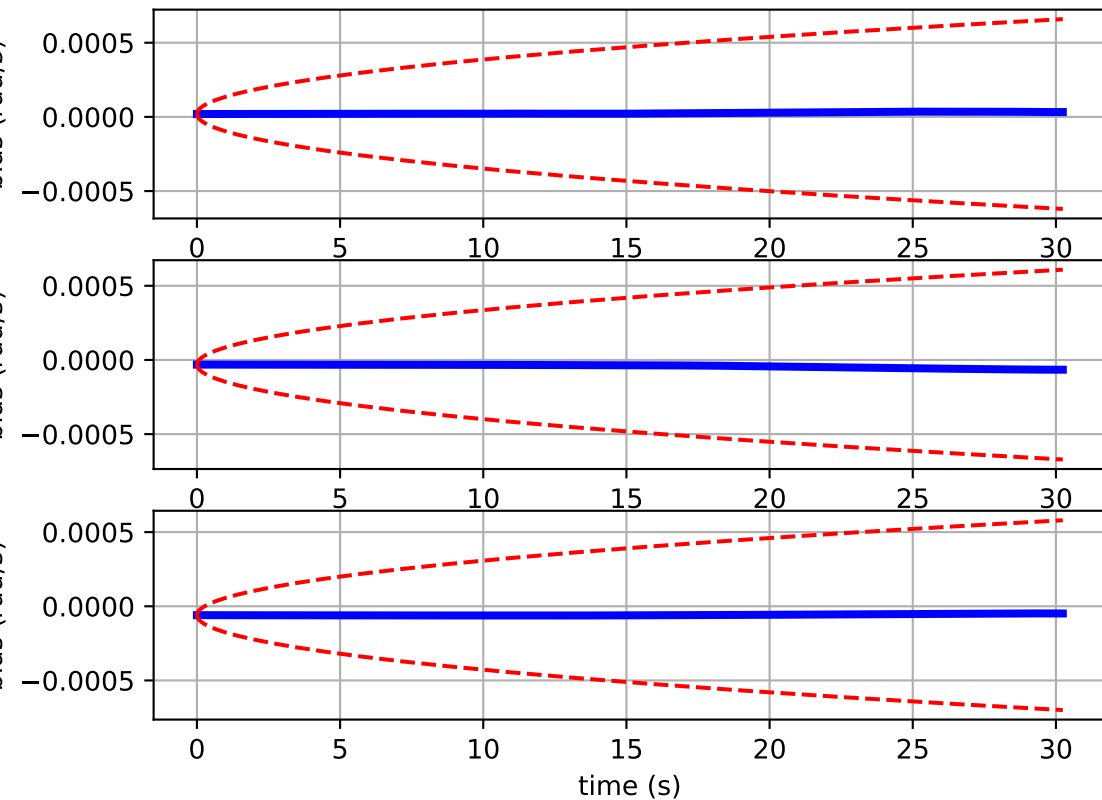
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

