

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.105013070749, median 0.0965937245871, std: 0.0572459239142

Gyroscope error (imu0): mean 2.47468327232, median 2.43508838102, std: 0.795289244553

Accelerometer error (imu0): mean 32.3826994905, median 32.4561170426, std: 2.03550603627

Residuals

Reprojection error (cam0) [px]: mean 0.105013070749, median 0.0965937245871, std: 0.0572459239142

Gyroscope error (imu0) [rad/s]: mean 0.00080303123576, median 0.00079018274931, std: 0.0002580702

Accelerometer error (imu0) [m/s²]: mean 1.0837324086, median 1.08618942984, std: 0.0681210613727

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.00812032 -0.99996658 -0.00094367 0.06062781]

[0.99996295 0.00812298 -0.00285015 0.00114745]

[0.00285772 -0.00092049 0.99999549 -0.10128381]

[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.00812032 0.99996295 0.00285772 -0.00135029]

[-0.99996658 0.00812298 -0.00092049 0.06052323]

[-0.00094367 -0.00285015 0.99999549 0.10134384]

[0. 0. 0. 1.]]

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

0.0039490356584600365

Gravity vector in target coords: [m/s²]

[-0.08204348 9.80616187 -0.02968377]

Calibration configuration

Camera model: pinhole
Focal length: [585.7561, 585.7561]
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: 0.01 [m]
Cols
 Count: 7
 Distance: 0.01 [m]

IMU configuration

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IMU0:

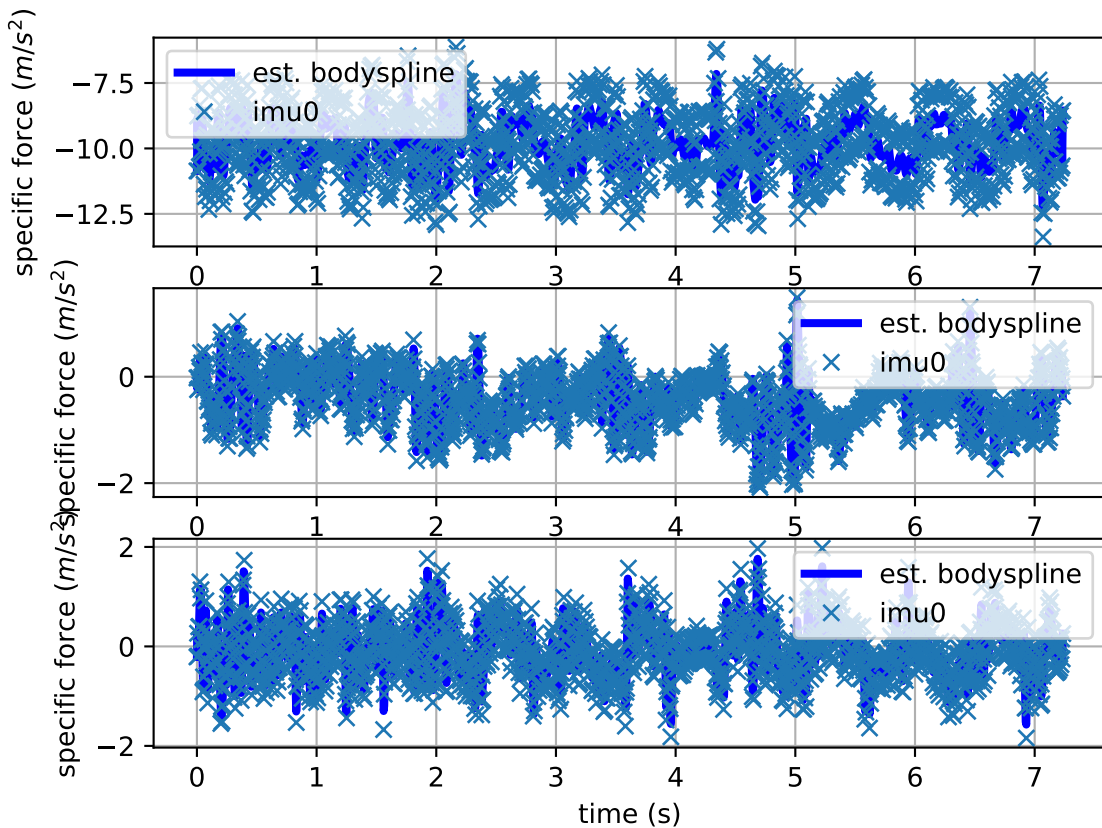
Model: calibrated
Update rate: 70.0
Accelerometer:
 Noise density: 0.004
 Noise density (discrete): 0.0334664010614
 Random walk: 0.006
Gyroscope:
 Noise density: 3.8785e-05
 Noise density (discrete): 0.000324498591291
 Random walk: 0.0003394

T_i b

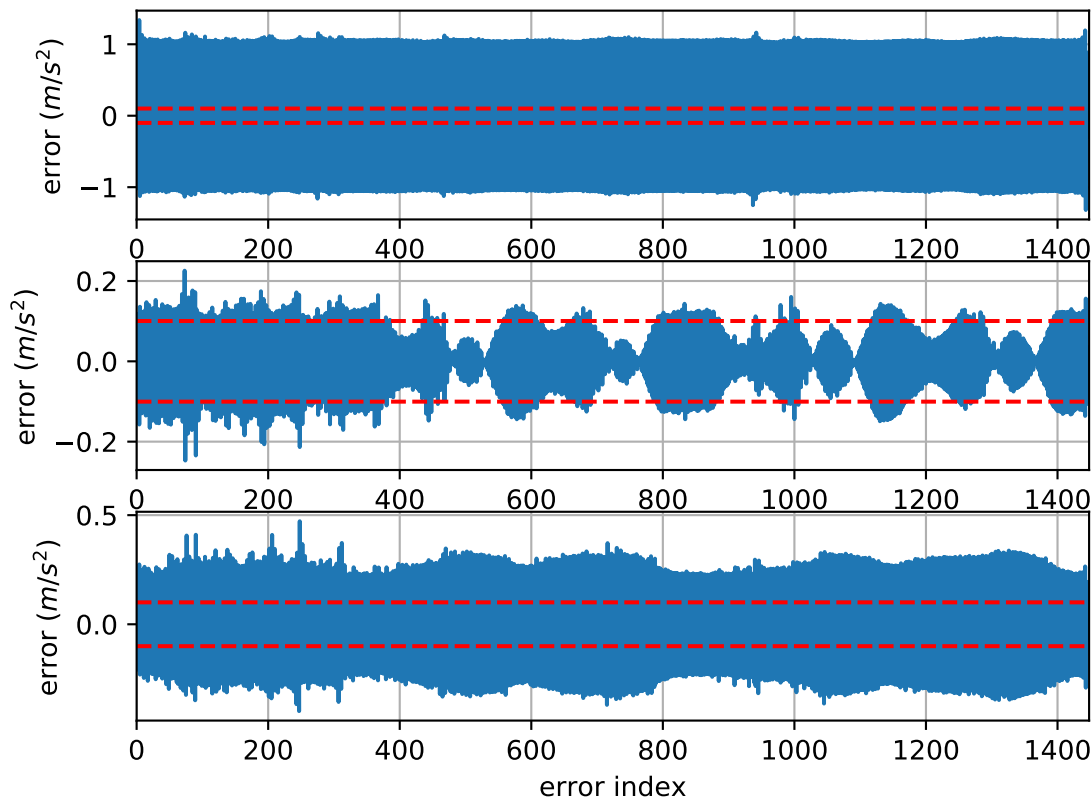
[[1. 0. 0. 0.]
[0. 1. 0. 0.]
[0. 0. 1. 0.]
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

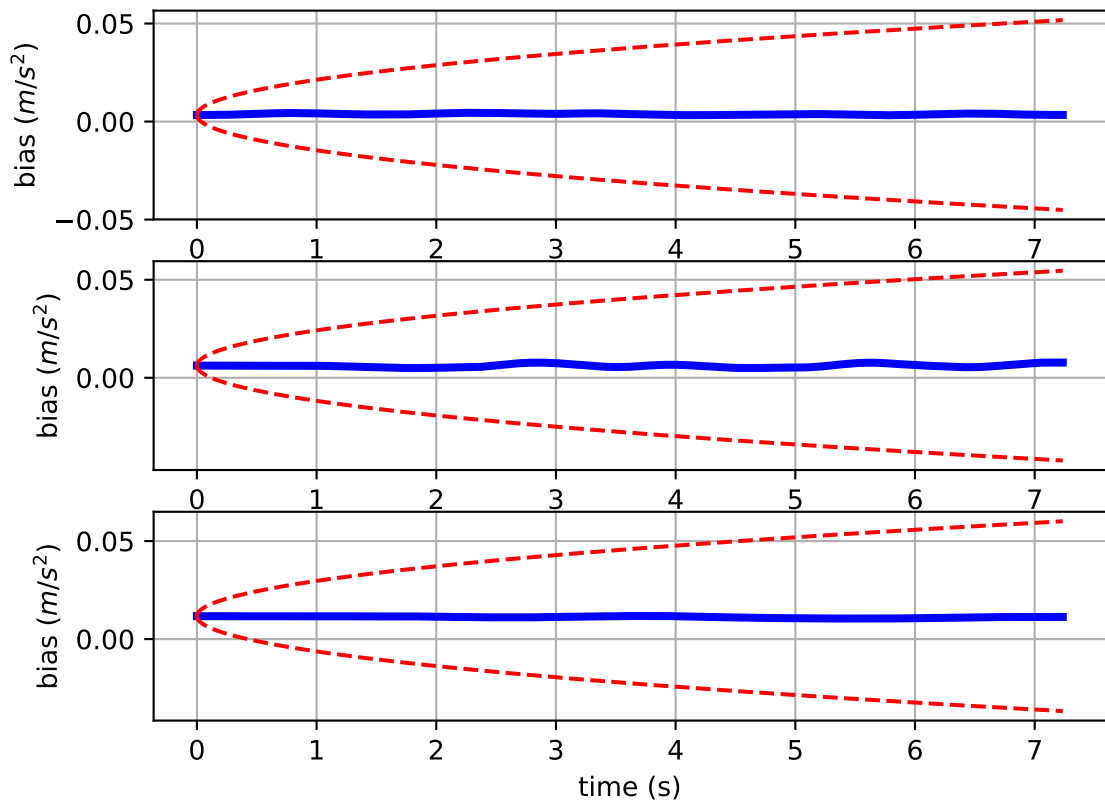
Comparison of predicted and measured specific force (imu0 frame)



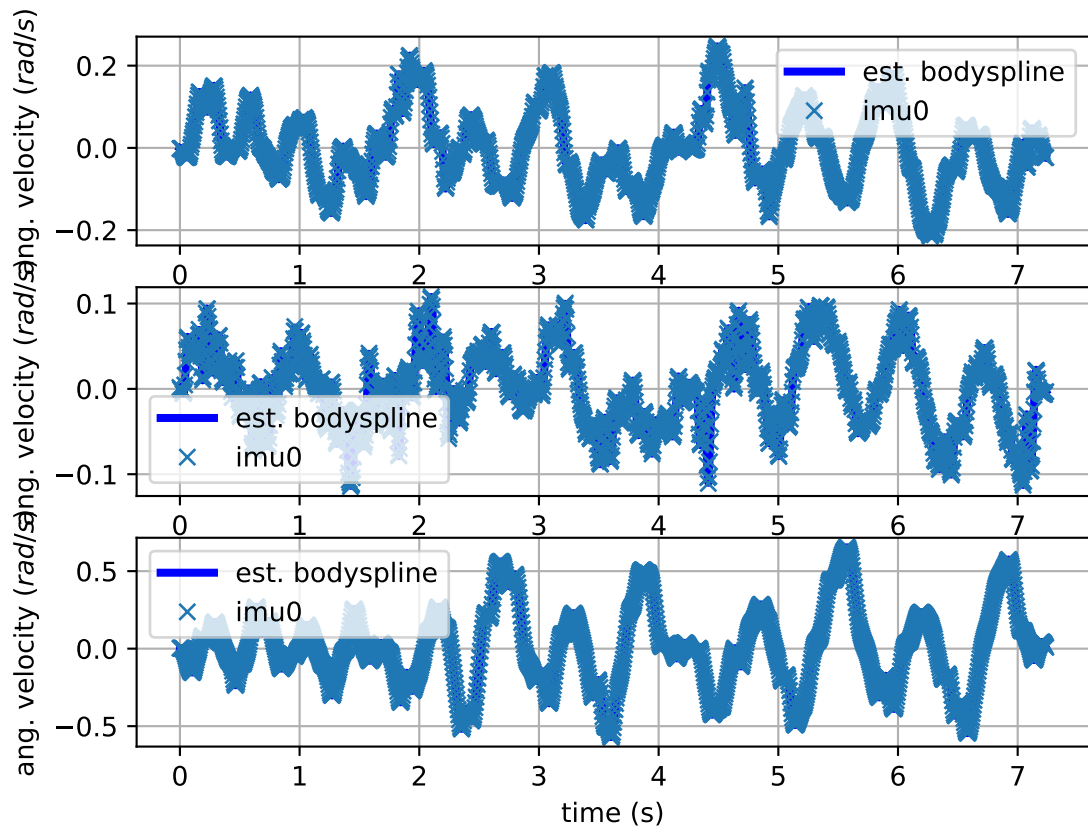
imu0: acceleration error



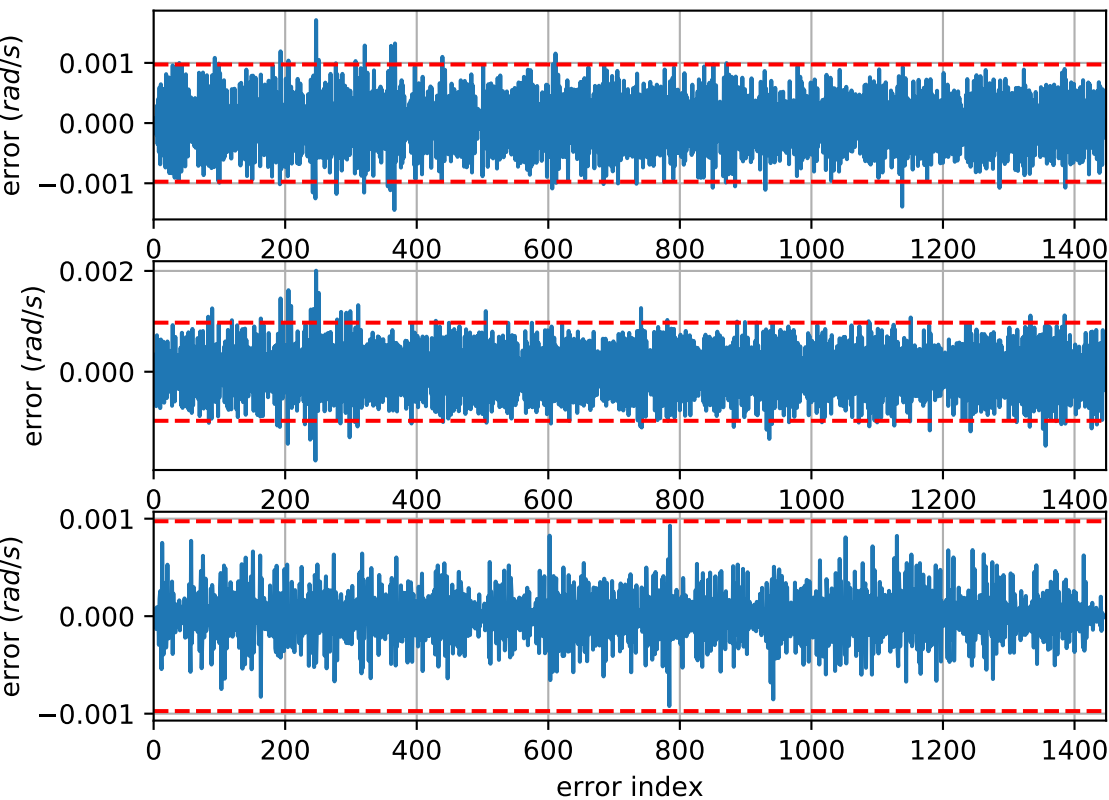
imu0: estimated accelerometer bias (imu frame)



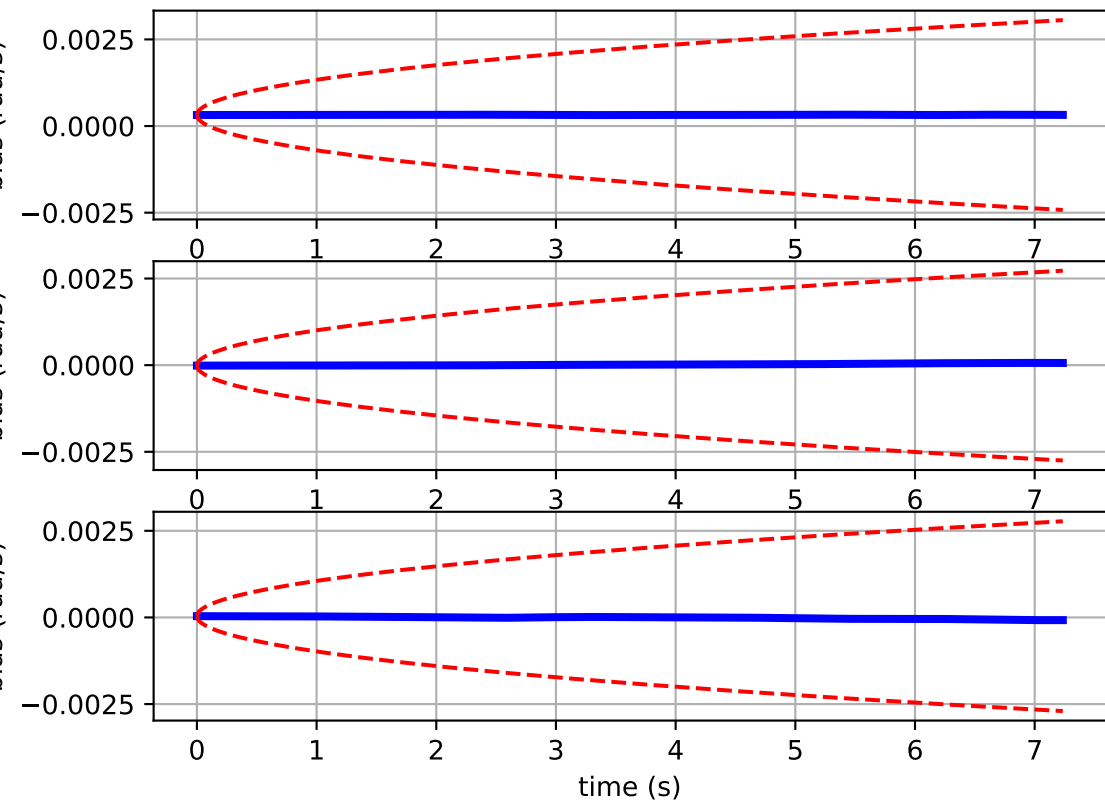
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

