

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.08588974122159411, median 0.0800397497222537, std: 0.04637572

Gyroscope error (imu0): mean 0.025357645638574504, median 0.020834824404655, std: 0.016988369

Accelerometer error (imu0): mean 0.10587102882392523, median 0.07587030205771872, std: 0.1299275

Residuals

Reprojection error (cam0) [px]: mean 0.08588974122159411, median 0.0800397497222537, std: 0.04637

Gyroscope error (imu0) [rad/s]: mean 0.009635905342658312, median 0.007917233273768899, std: 0.00

Accelerometer error (imu0) [m/s^2]: mean 0.040230990953091586, median 0.028830714781933112, std: 0

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.99998976 0.00423405 -0.00160069 -0.00686181]

[0.00423847 -0.99998719 0.00276746 -0.00793126]

[-0.00158895 -0.00277422 -0.99999489 -0.03412494]

[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.99998976 0.00423847 -0.00158895 0.00684114]

[0.00423405 -0.99998719 -0.00277422 -0.00799677]

[-0.00160069 0.00276746 -0.99999489 -0.0341138]

[0. 0. 0. 1.]]

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

0.001939579925335353

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

[-0.02867823 -9.80650804 -0.00066143]

Calibration configuration

Camera model: pinhole

Focal length: [350.70040966794545, 350.8792449525716]

Principal point: [375.2977403521422, 268.5927747079796]

Distortion model: equidistant

Distortion coefficients: [-0.041202246303621064, -0.0012607385825244833, 0.0006712169937177444, -0.00012607385825244833, 0.00012607385825244833, 0.00012607385825244833]

Type: aprilgrid

Tags:

Rows: 7

Cols: 12

Size: 0.15 [m]

Spacing 0.0375 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 400.0

Accelerometer:

Noise density: 0.019

Noise density (discrete): 0.37999999999999995

Random walk: 0.0043

Gyroscope:

Noise density: 0.019

Noise density (discrete): 0.37999999999999995

Random walk: 0.000266

T_i_b

[[1. 0. 0. 0.]

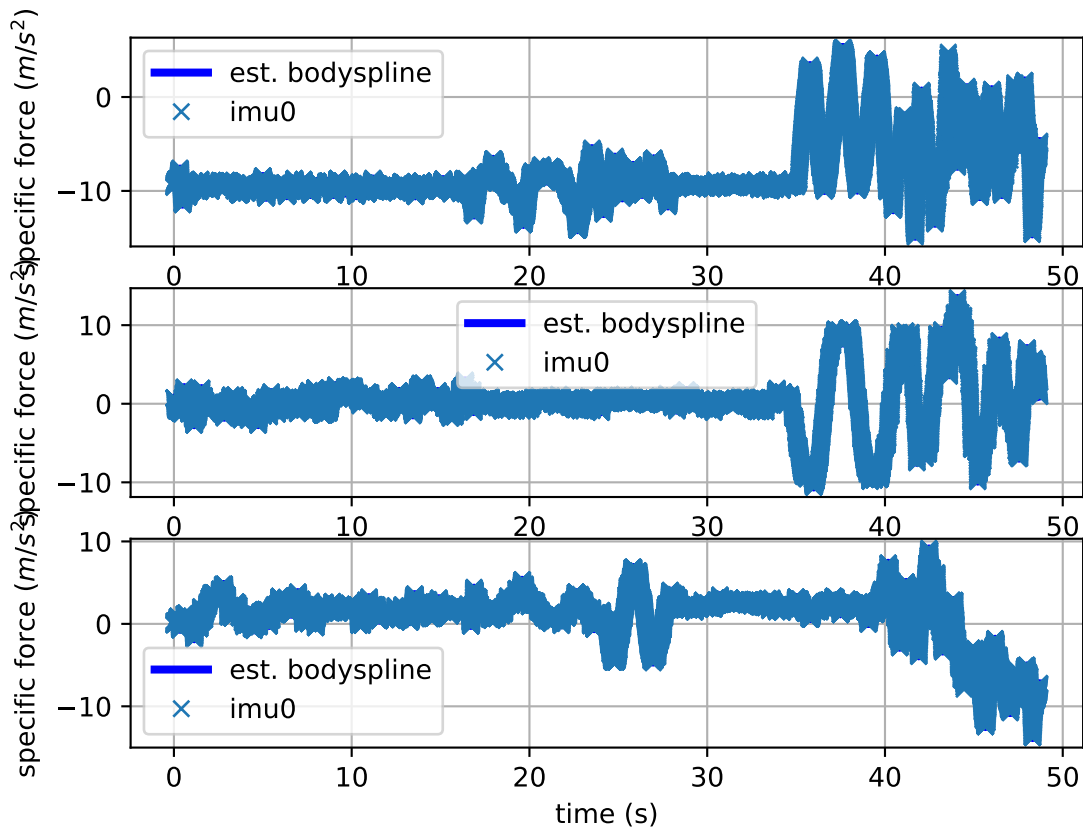
[0. 1. 0. 0.]

[0. 0. 1. 0.]

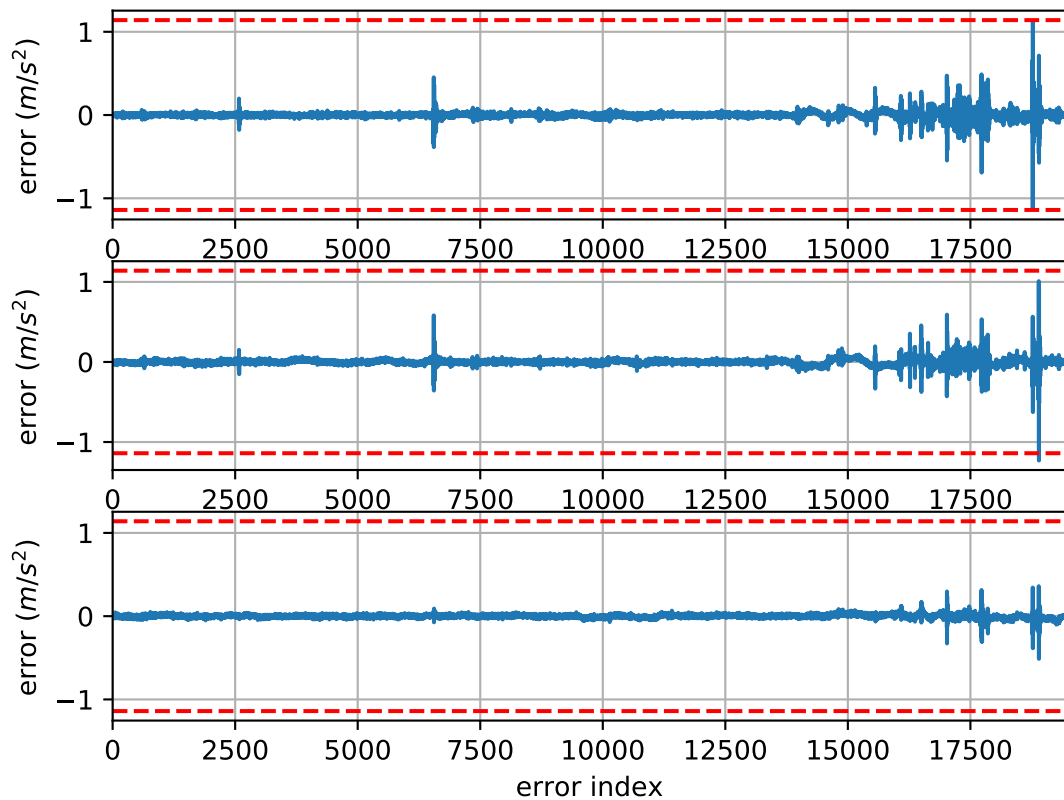
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

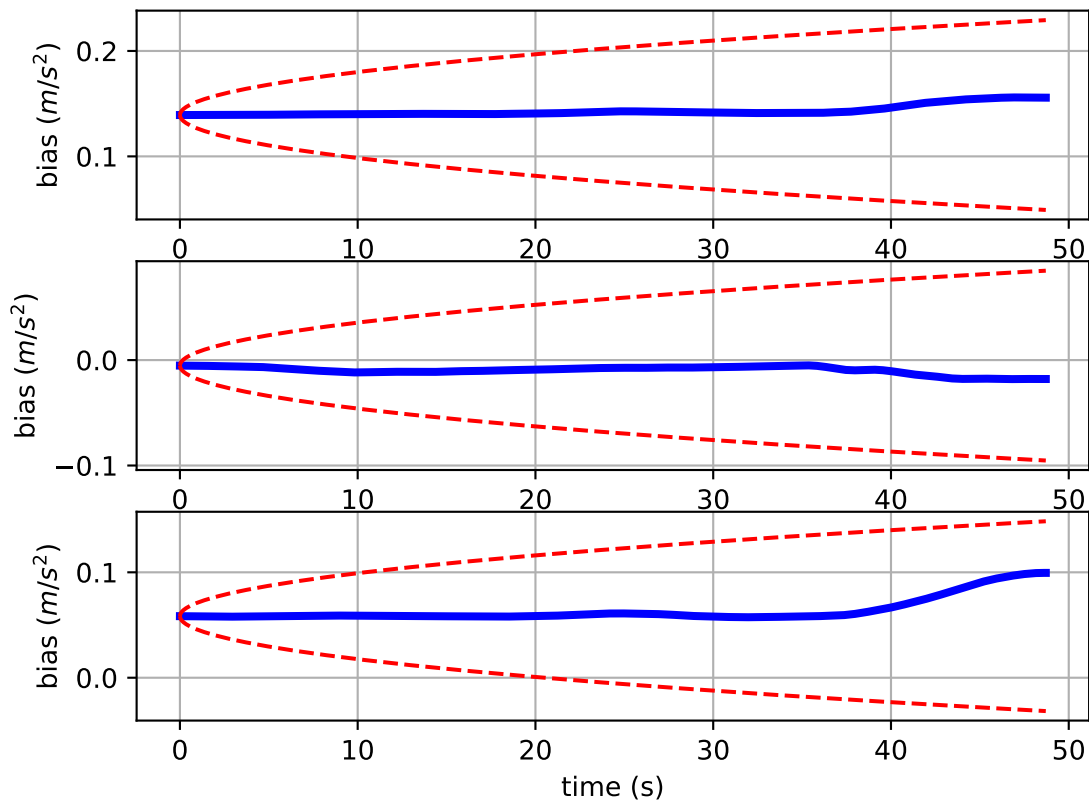
Comparison of predicted and measured specific force (imu0 frame)



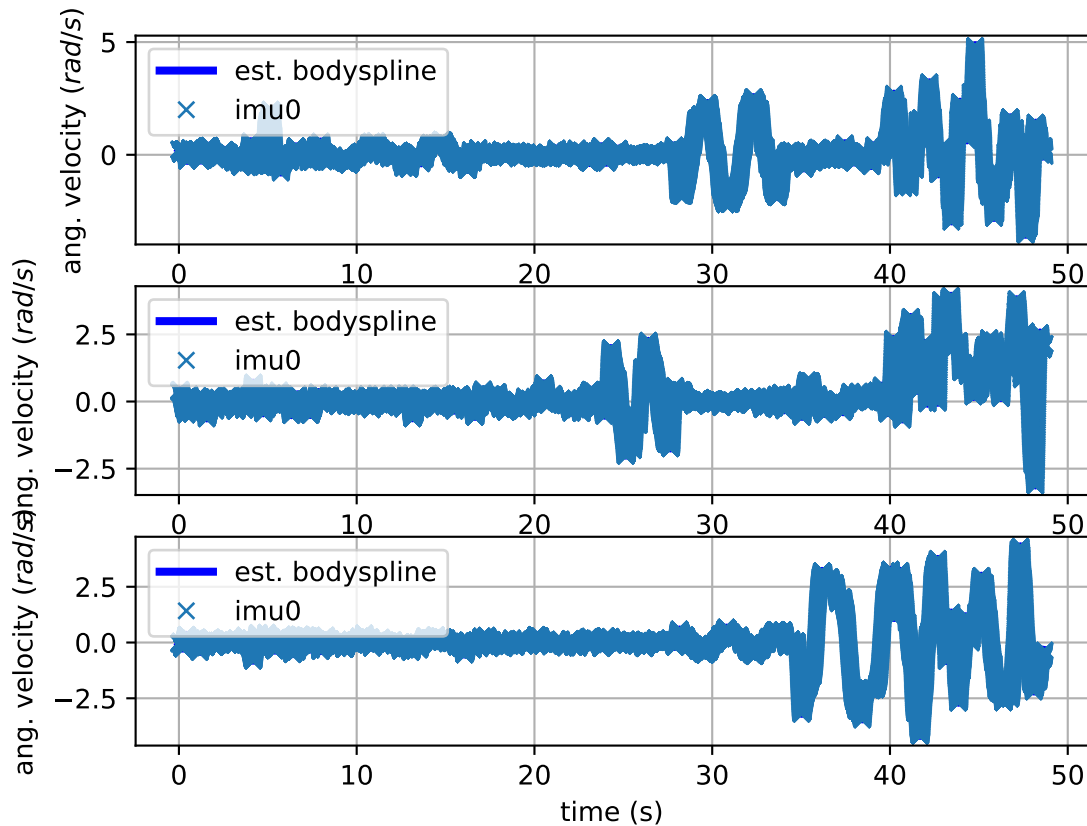
imu0: acceleration error



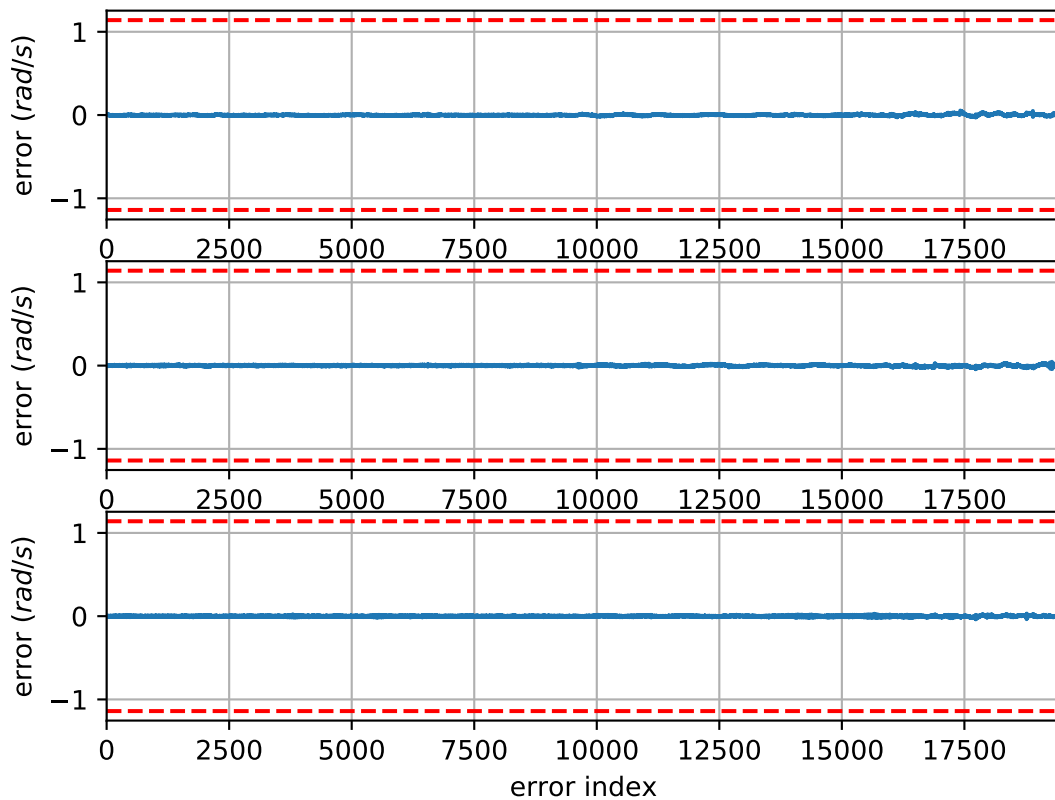
imu0: estimated accelerometer bias (imu frame)



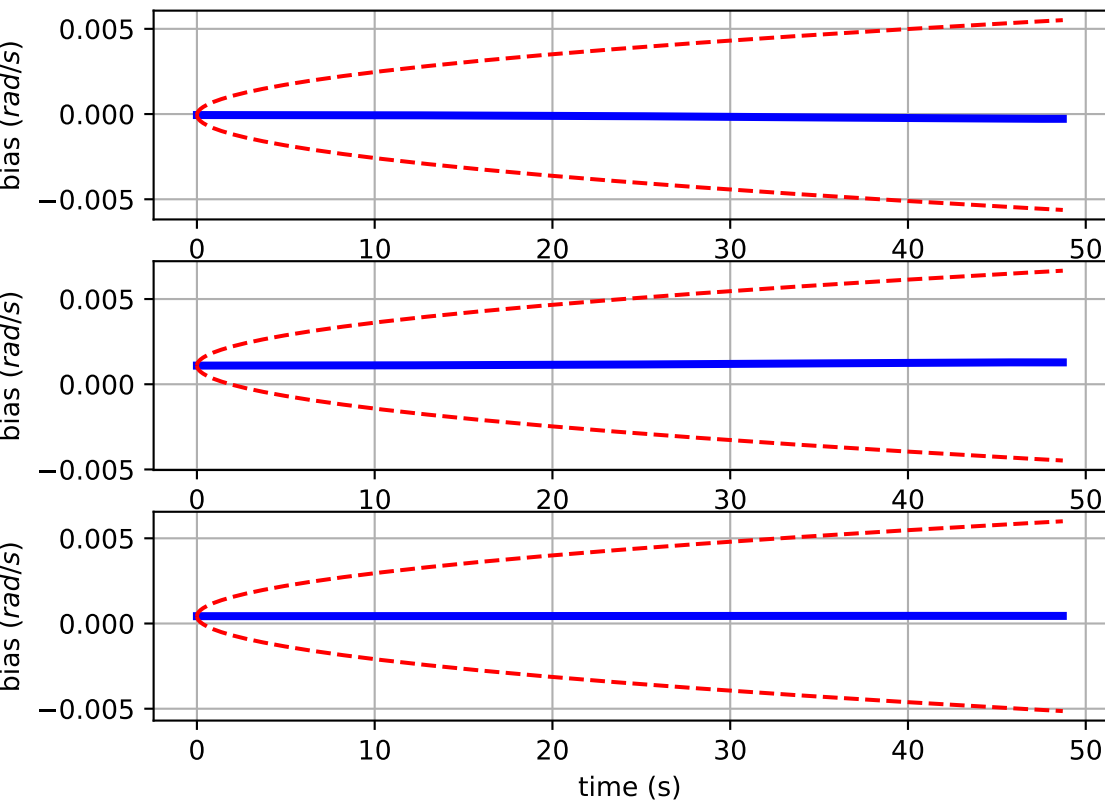
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

