

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.448041615078, median 0.31681982198, std: 0.413871000681

Gyroscope error (imu0): mean 1.34152973689, median 1.1977554271, std: 0.997372337423

Accelerometer error (imu0): mean 4.70366529897, median 3.55465972101, std: 3.55172952442

Residuals

Reprojection error (cam0) [px]: mean 0.448041615078, median 0.31681982198, std: 0.413871000681

Gyroscope error (imu0) [rad/s]: mean 0.0948604774116, median 0.0846940984702, std: 0.070524874316

Accelerometer error (imu0) [m/s²]: mean 0.665198725866, median 0.502704798708, std: 0.50229040633

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.00179621 0.99975266 -0.02216745 0.04066494]

[-0.99977684 0.00226197 0.02100357 -0.02253073]

[0.02104852 0.02212478 0.99953362 0.02270426]

[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.00179621 -0.99977684 0.02104852 -0.02307663]

[0.99975266 0.00226197 0.02212478 -0.04110625]

[-0.02216745 0.02100357 0.99953362 -0.02131901]

[0. 0. 0. 1.]]

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

0.0006782345229153565

Gravity vector in target coords: [m/s²]

[-0.0829319 8.29400593 -5.23173115]

Calibration configuration

Camera model: pinhole

Focal length: [462.1043820249756, 460.64320792063444]

Principal point: [360.5759001834265, 234.15330719645002]

Distortion model: equidistant

Distortion coefficients: [-0.0066083616410188865, 0.03065787714084398, -0.03875016297076553, 0.019

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.02 [m]

Spacing 0.006 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 200.0

Accelerometer:

Noise density: 0.01

Noise density (discrete): 0.141421356237

Random walk: 0.0002

Gyroscope:

Noise density: 0.005

Noise density (discrete): 0.0707106781187

Random walk: 4e-06

T_i_b

[[1. 0. 0. 0.]

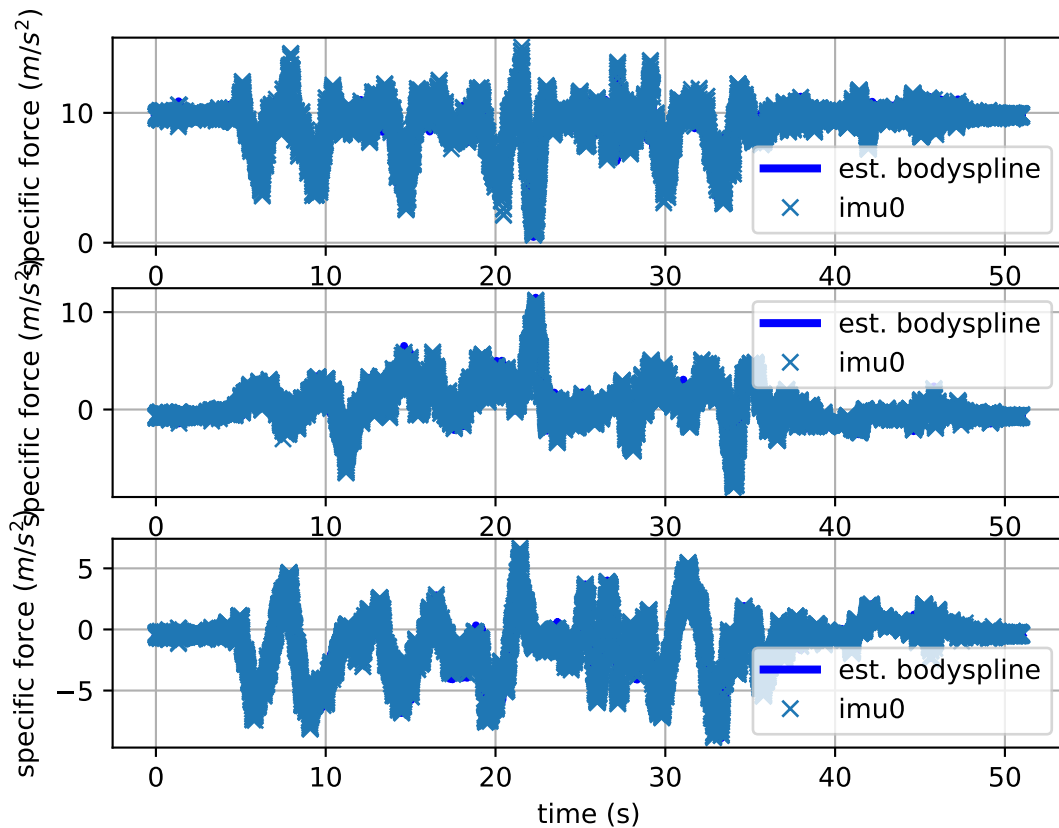
[0. 1. 0. 0.]

[0. 0. 1. 0.]

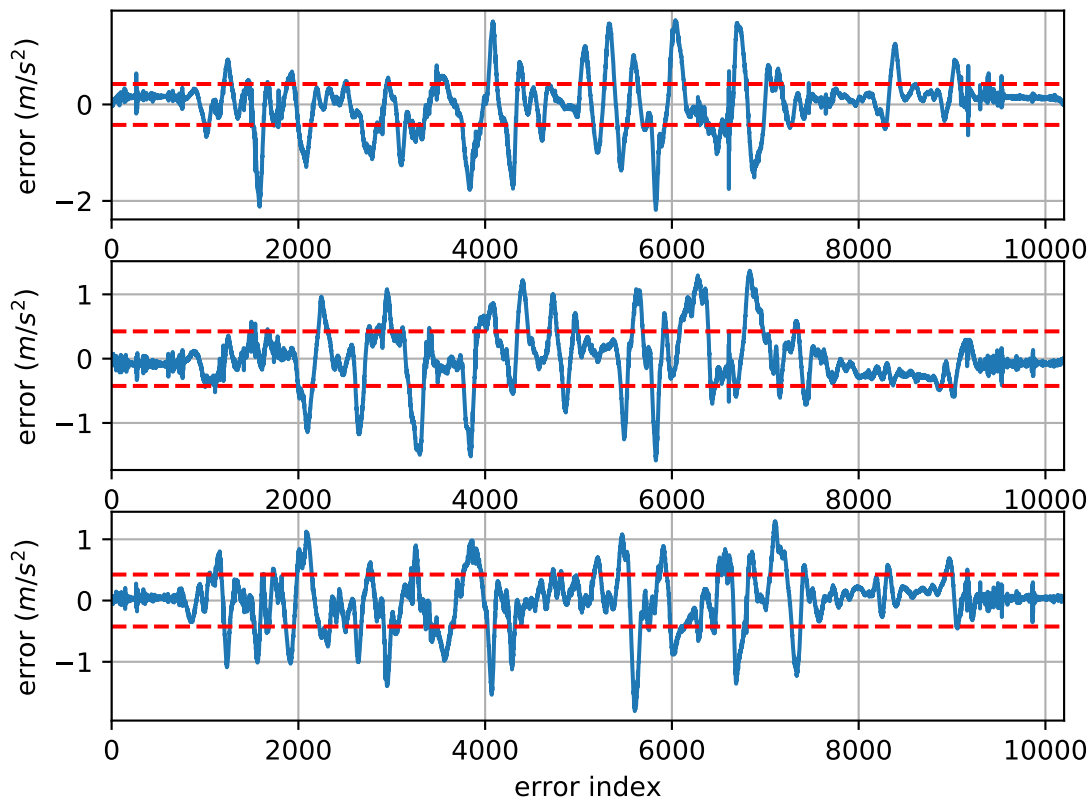
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

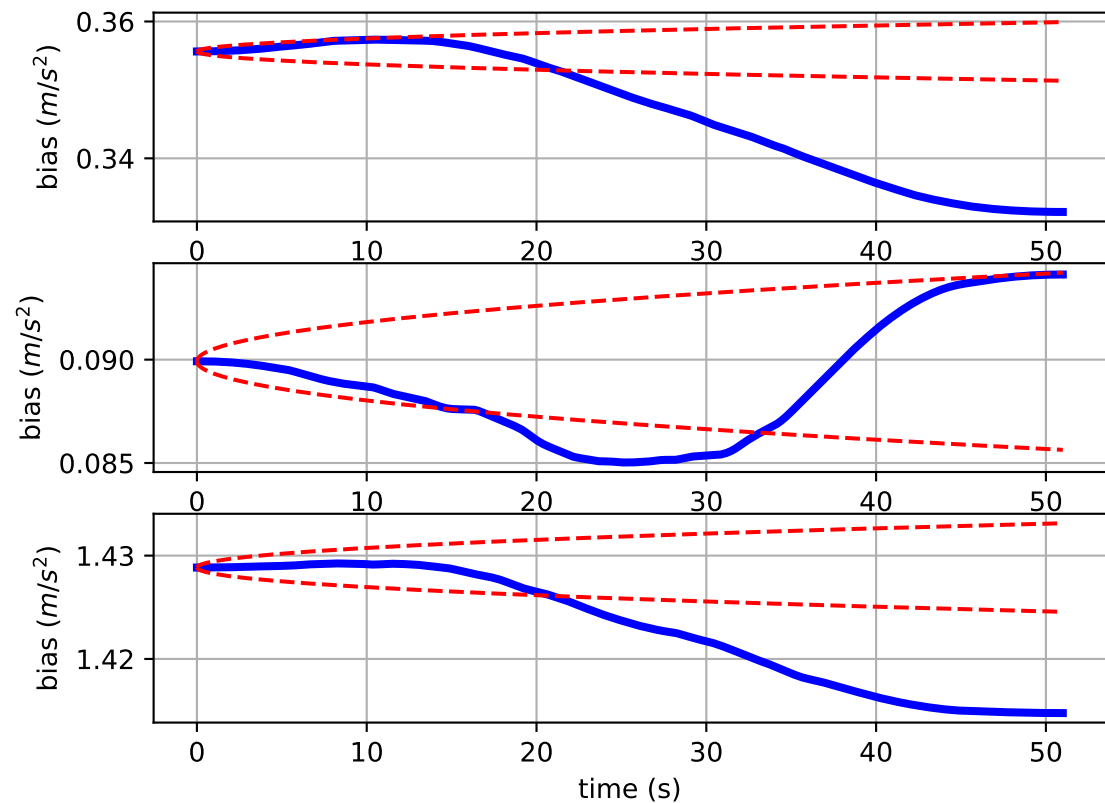
Comparison of predicted and measured specific force (imu0 frame)



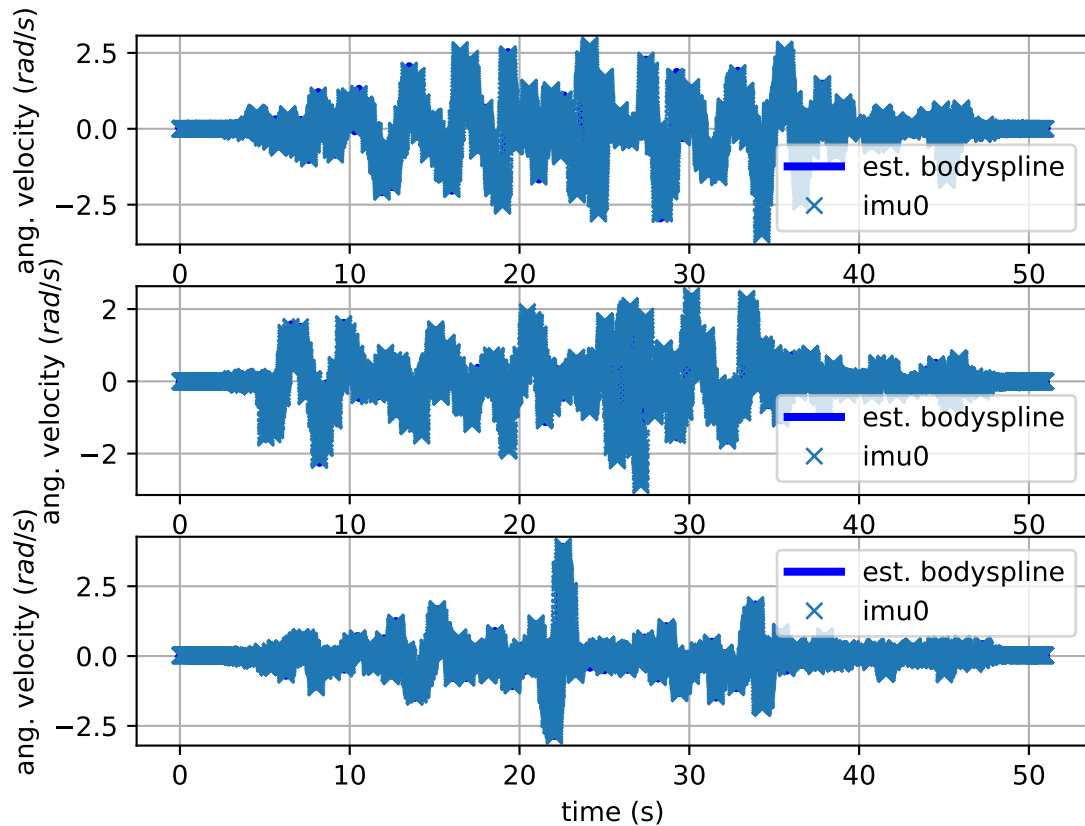
imu0: acceleration error



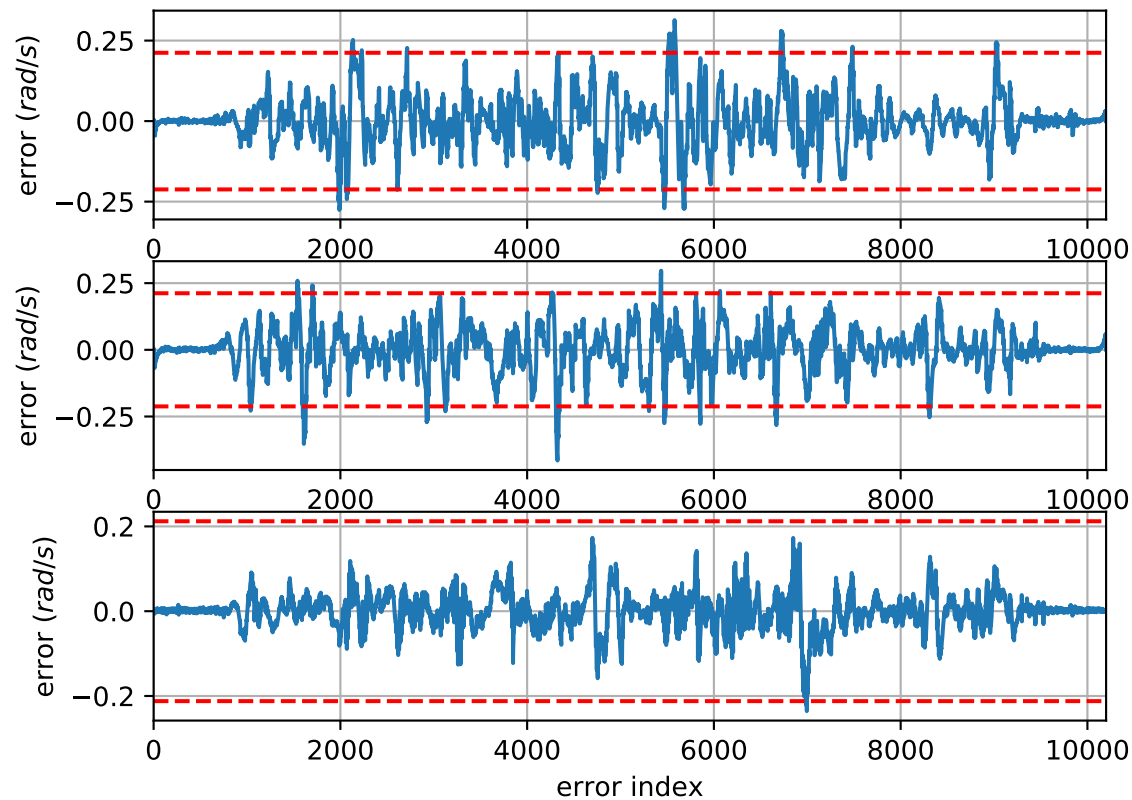
imu0: estimated accelerometer bias (imu frame)



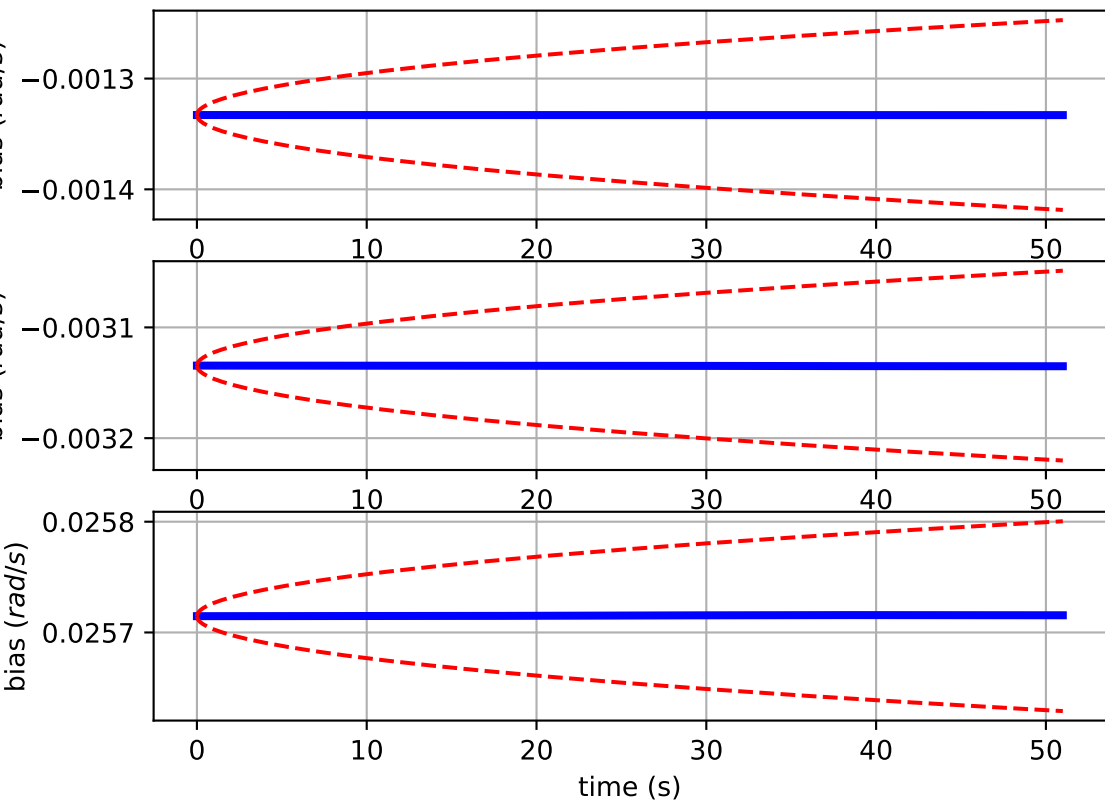
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

