

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.415481064259, median 0.341153249865, std: 0.305820961524
Gyroscope error (imu0): mean 0.675644655009, median 0.569847601912, std: 0.497114901822
Accelerometer error (imu0): mean 0.868747488852, median 0.73920747913, std: 0.660789611027

Residuals

Reprojection error (cam0) [px]: mean 0.415481064259, median 0.341153249865, std: 0.305820961524
Gyroscope error (imu0) [rad/s]: mean 0.000589608064641, median 0.000497283208285, std: 0.00043381
Accelerometer error (imu0) [m/s²]: mean 0.0121624648439, median 0.0103489047078, std: 0.009251054

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.00228619 -0.99997946 0.00598699 -0.00572189]
[-0.99996641 -0.0023332 -0.00785687 -0.00117263]
[0.00787067 -0.00596883 -0.99995121 -0.02565179]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.00228619 -0.99996641 0.00787067 -0.00095761]
[-0.99997946 -0.0023332 -0.00596883 -0.00587761]
[0.00598699 -0.00785687 -0.99995121 -0.0256255]
[0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
-0.0442654176526

Gravity vector in target coords: [m/s²]
[-0.0448307 -9.80631698 -0.05060086]

Calibration configuration

Camera model: pinhole

Focal length: [1470.0495238123717, 1467.952524594808]

Principal point: [673.5134474922614, 483.0784345893267]

Distortion model: radtan

Distortion coefficients: [-0.10274641239957318, 0.2103353258353151, -0.0016423912126333651, 0.0018

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.0878 [m]

Spacing 0.02610294 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 100.0

Accelerometer:

Noise density: 0.0014

Noise density (discrete): 0.014

Random walk: 8e-05

Gyroscope:

Noise density: 8.7266e-05

Noise density (discrete): 0.00087266

Random walk: 2.2e-06

T_i_b

[[1. 0. 0. 0.]

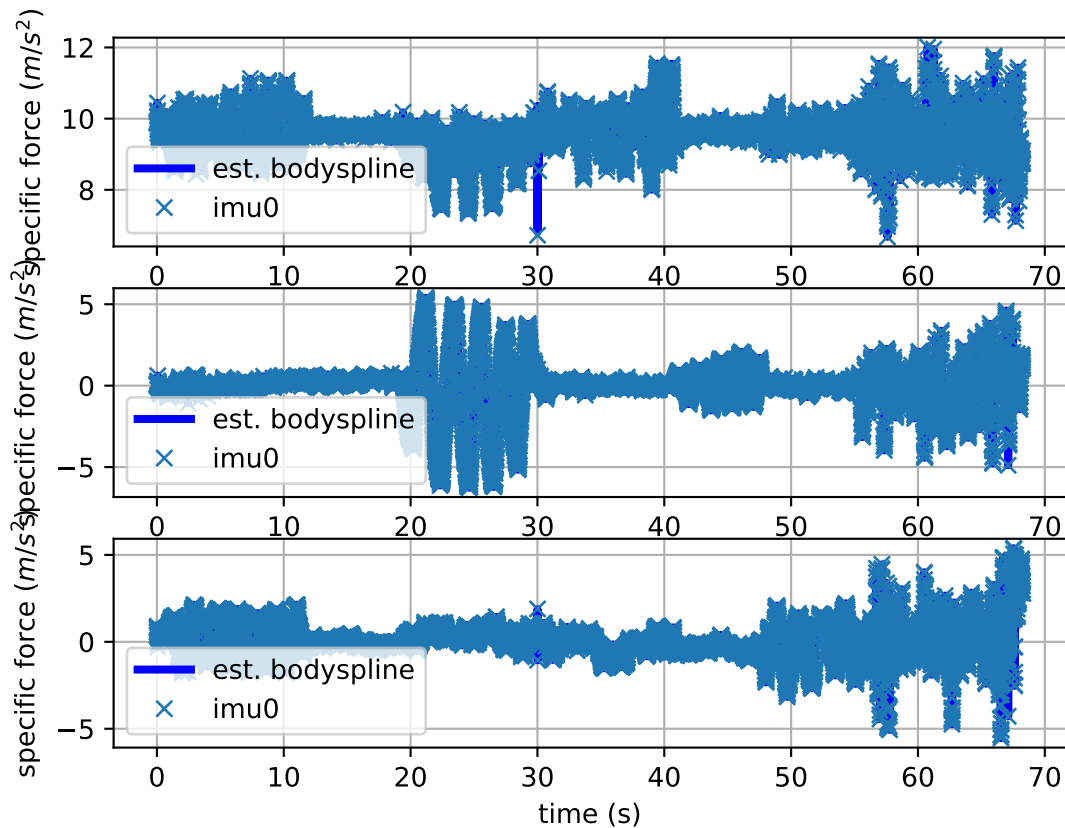
[0. 1. 0. 0.]

[0. 0. 1. 0.]

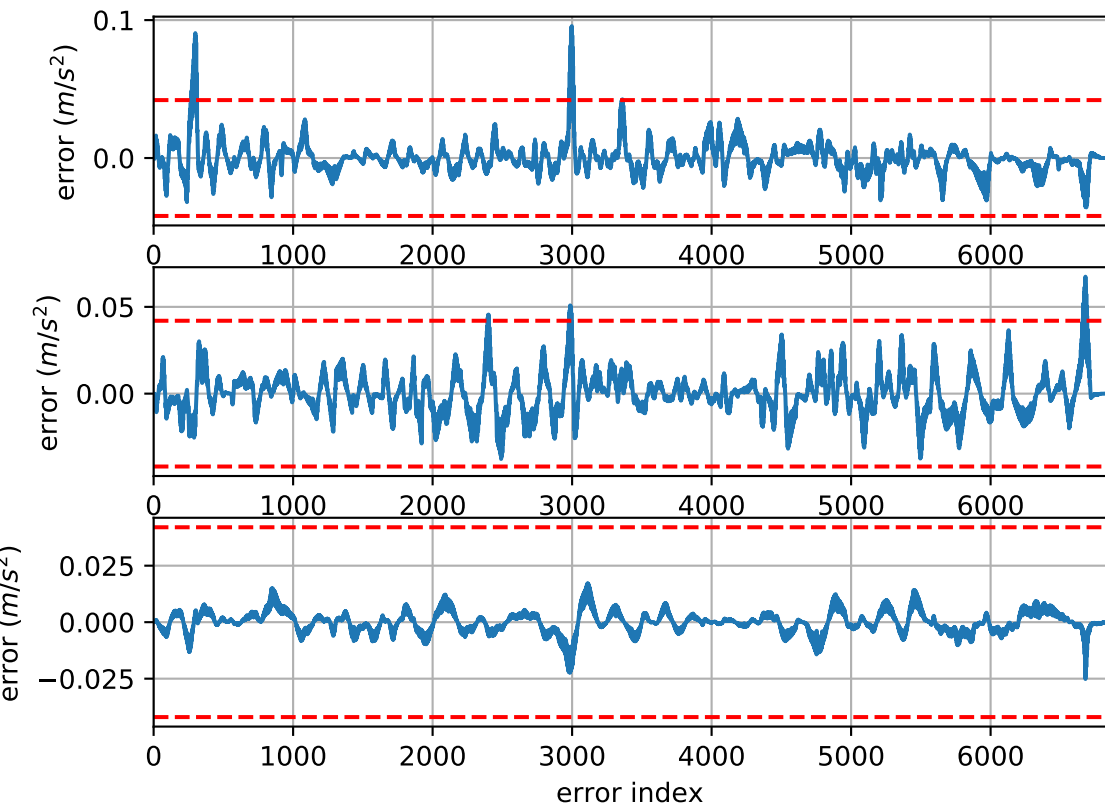
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

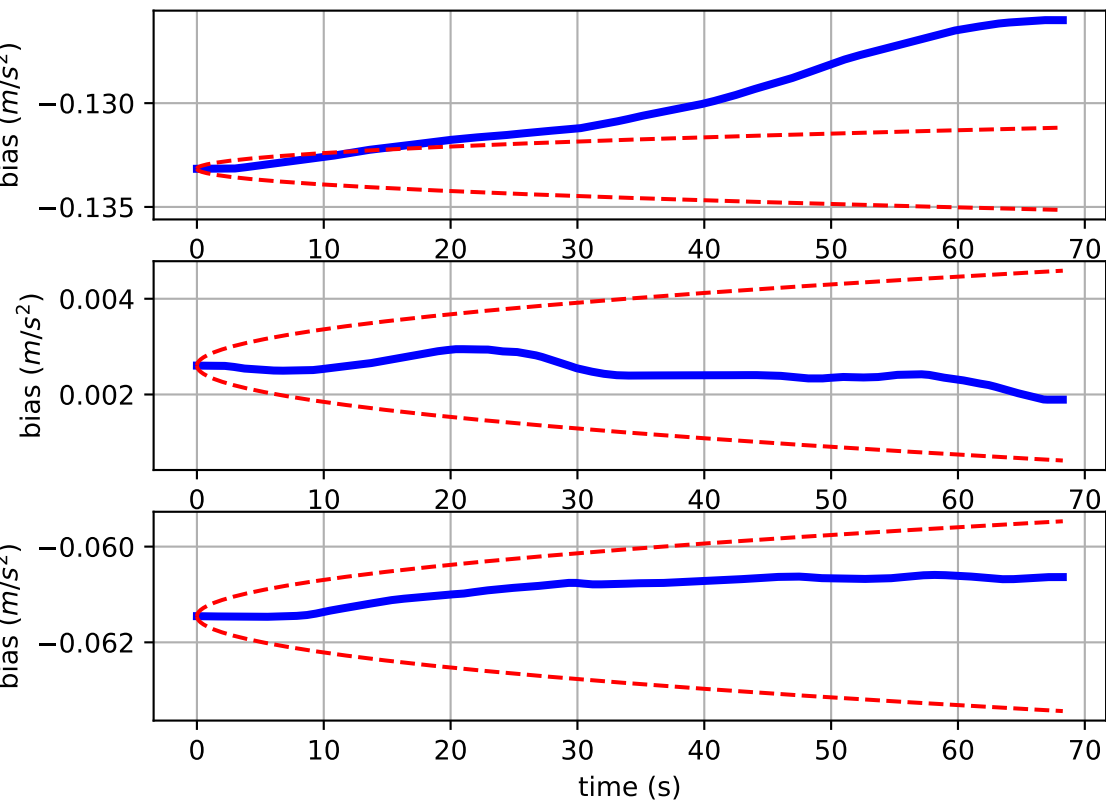
Comparison of predicted and measured specific force (imu0 frame)



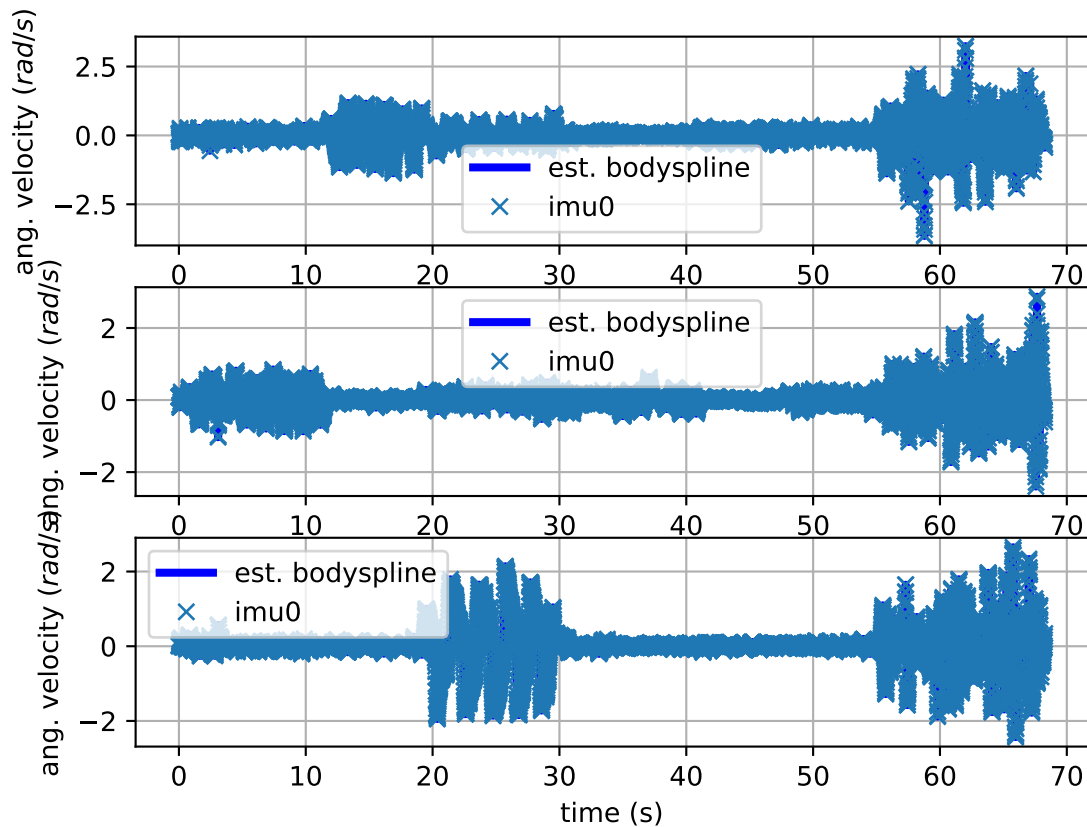
imu0: acceleration error



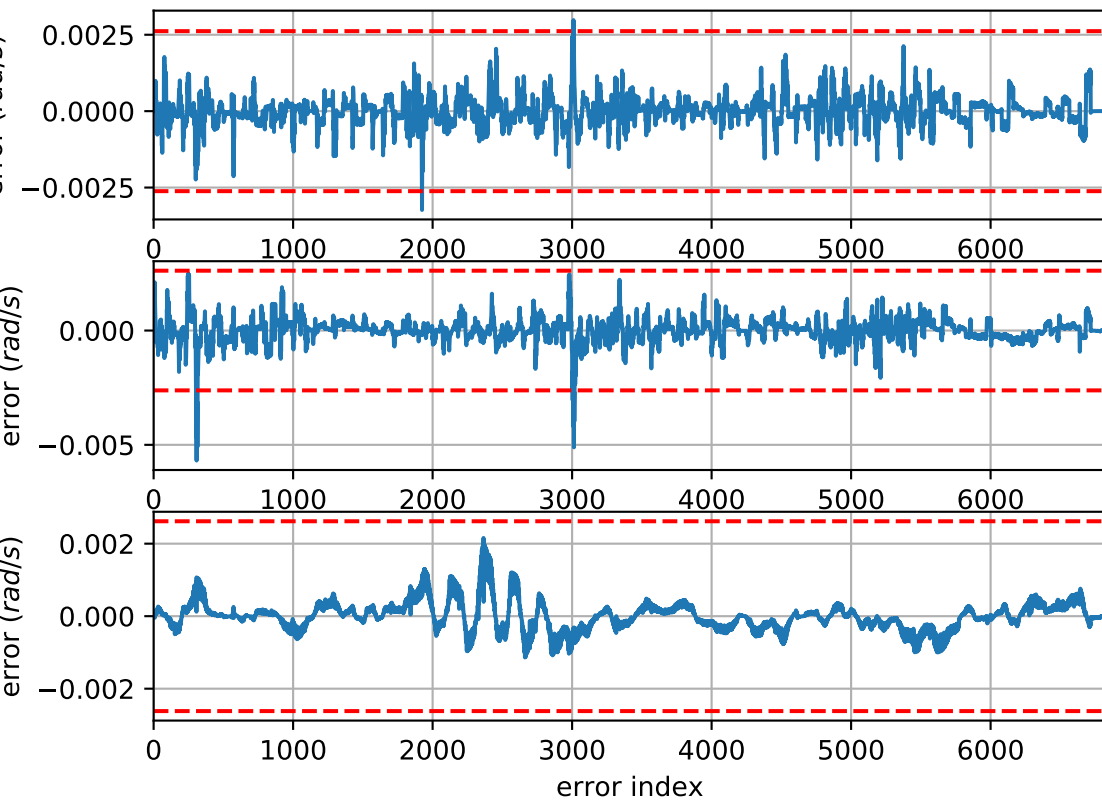
imu0: estimated accelerometer bias (imu frame)



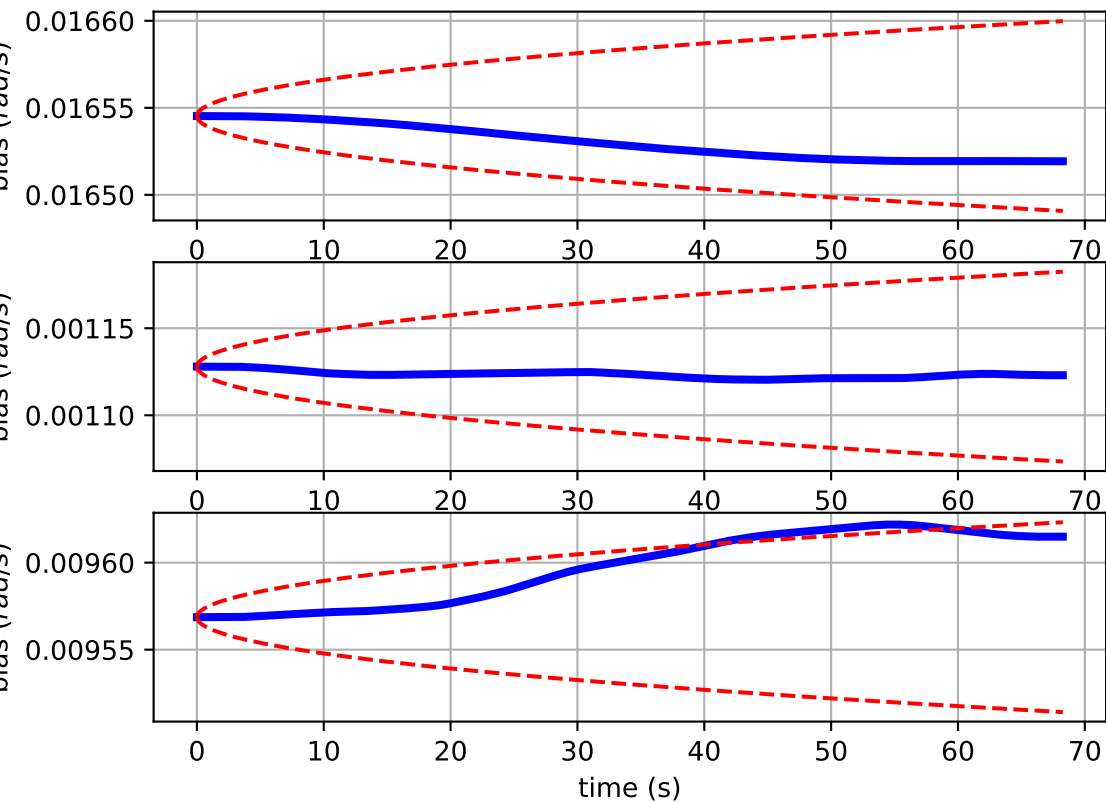
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

