

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 8.411727795000935, median 3.194491597248927, std: 17.12832956064

Gyroscope error (imu0): mean 4.429465676042158, median 3.299710803645951, std: 4.2817829940664

Accelerometer error (imu0): mean 9.153626161371172, median 4.769077093308229, std: 12.76038612722

Residuals

Reprojection error (cam0) [px]: mean 8.411727795000935, median 3.194491597248927, std: 17.12832956064

Gyroscope error (imu0) [rad/s]: mean 0.0019249883934112763, median 0.0014340115632881121, std: 0.0019249883934112763

Accelerometer error (imu0) [m/s^2]: mean 2.5701736699922173, median 1.3390711133813367, std: 3.5821736699922173

Transformation (cam0):

T_ci: (imu0 to cam0):

[[-0.97935903 0.19611695 0.04892883 -0.00471554]
[-0.18820003 0.79645012 0.57467204 0.10750578]
[0.07373355 -0.57201866 0.81691984 0.06870467]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[-0.97935903 -0.18820003 0.07373355 0.01978496]
[0.19611695 0.79645012 -0.57201866 -0.04539784]
[0.04892883 0.57467204 0.81691984 -0.11767605]
[0. 0. 0. 1.]]

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

-0.5430828983501427

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

[0.78046491 -8.49557182 4.83575815]

Calibration configuration

Camera model: pinhole
Focal length: [314.88553720251514, 314.9285804963858]
Principal point: [326.9409922714454, 220.92580503605765]
Distortion model: equidistant
Distortion coefficients: [-0.033486506190876564, -0.009600031841612875, 0.004518892915124697, -0.0000000000000000]
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: 100.0
Accelerometer:
Noise density: 0.028078202284887905
Noise density (discrete): 0.28078202284887904
Random walk: 0.0013746711336113347

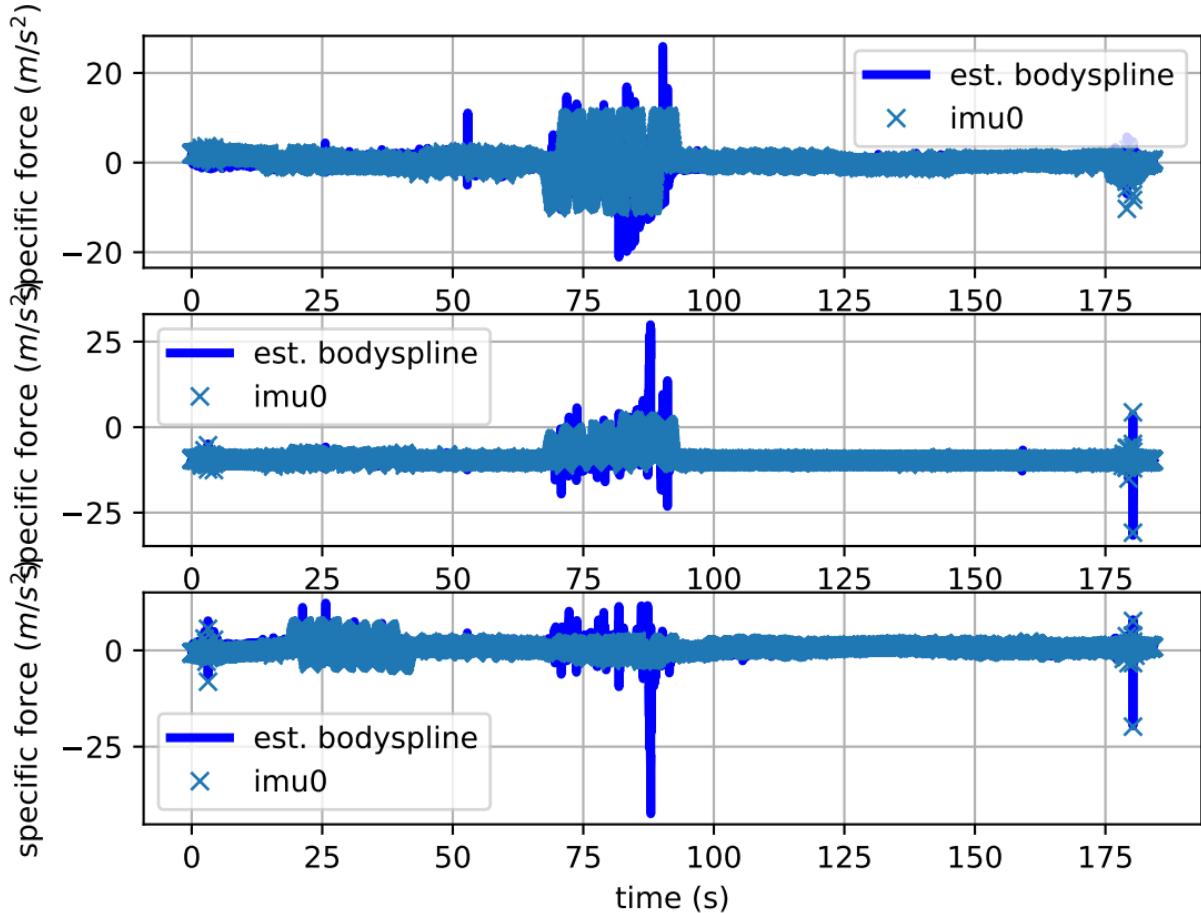
Gyroscope:
Noise density: 4.3458704372020396e-05
Noise density (discrete): 0.00043458704372020395
Random walk: 1.4130084694399372e-06

T_ib (imu0 to imu0)

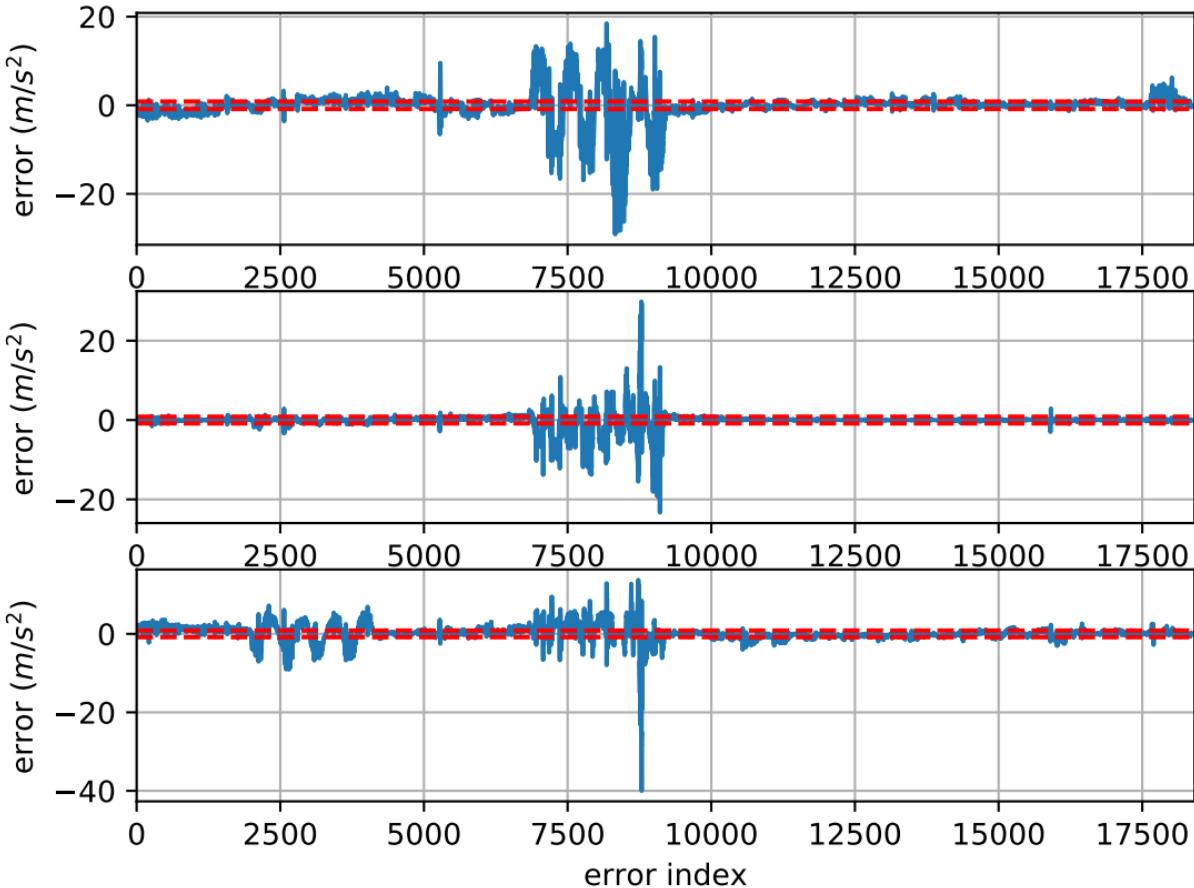
[[1. 0. 0. 0.]
[0. 1. 0. 0.]
[0. 0. 1. 0.]
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

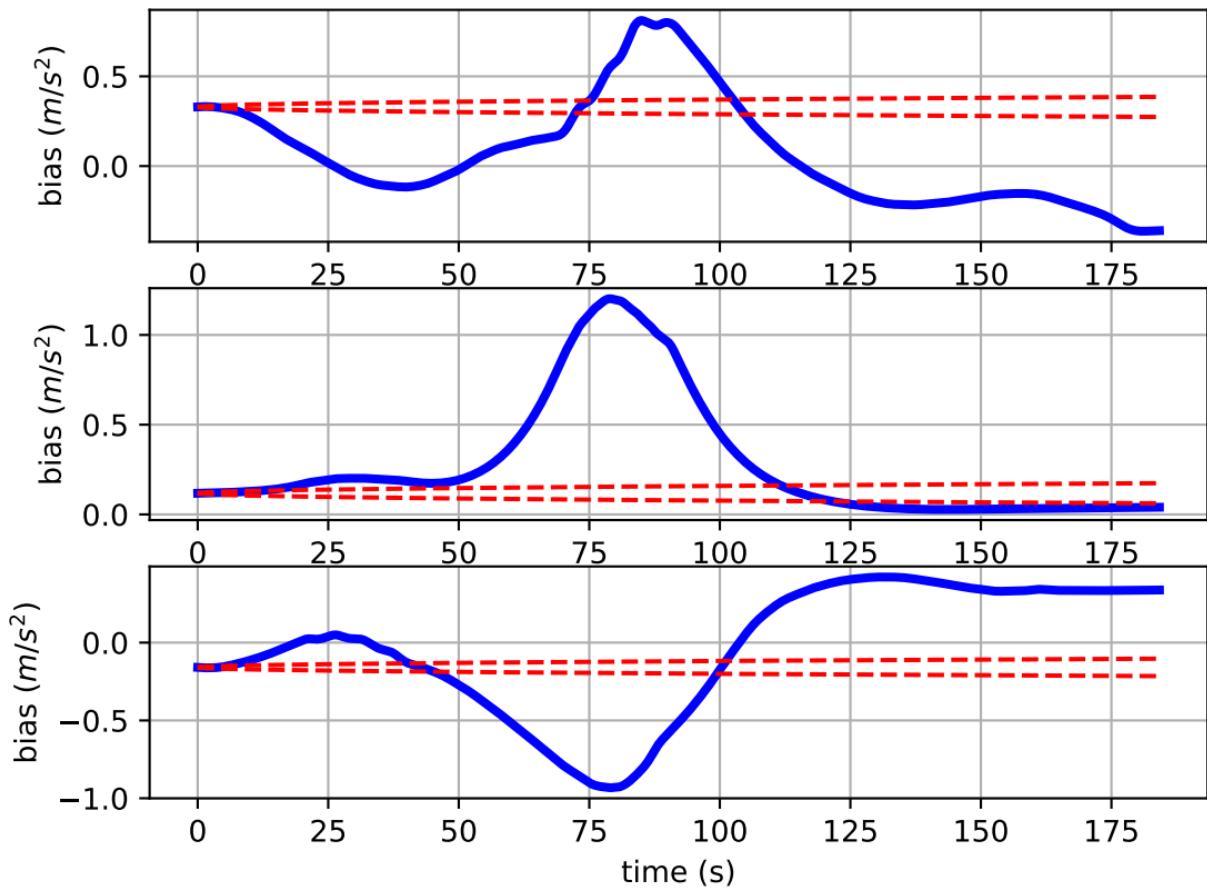
Comparison of predicted and measured specific force (imu0 frame)



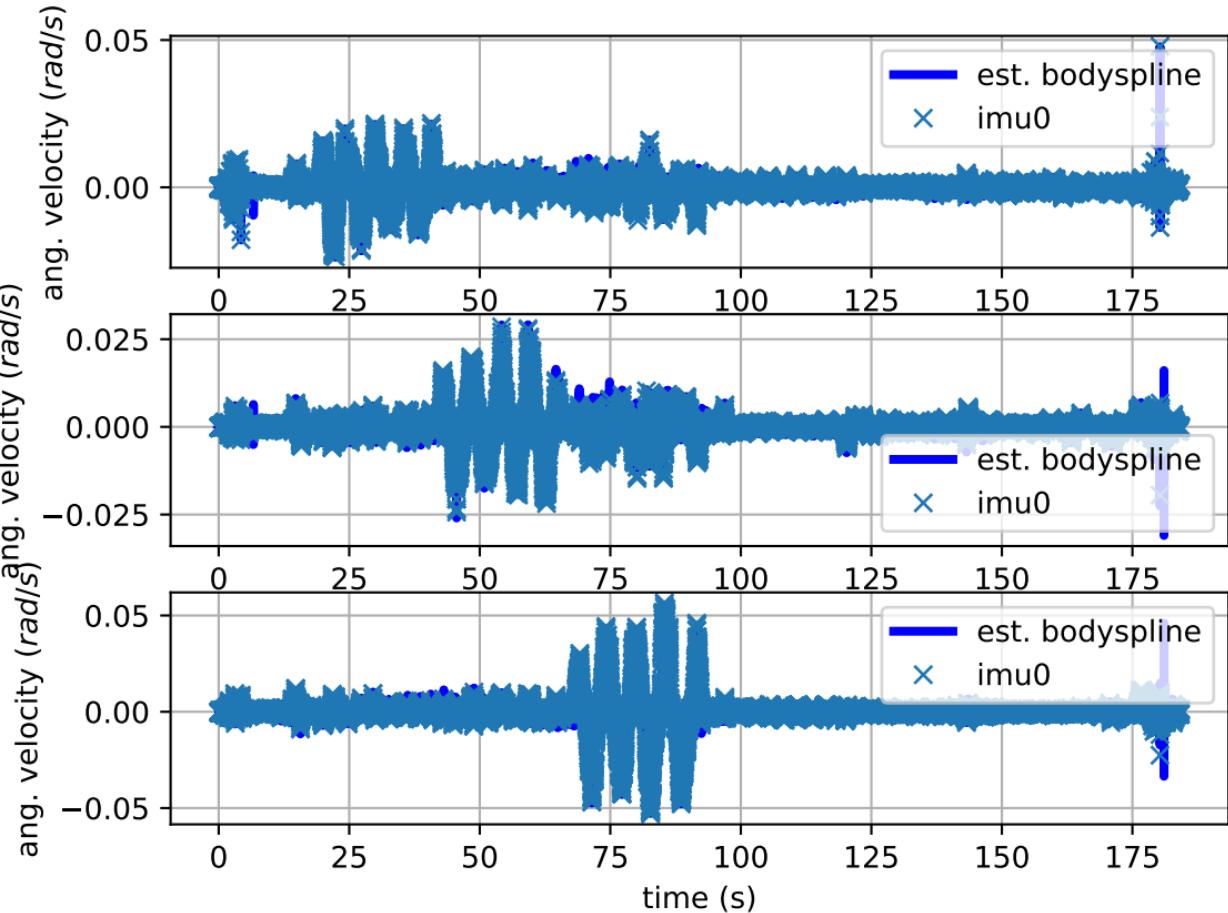
imu0: acceleration error



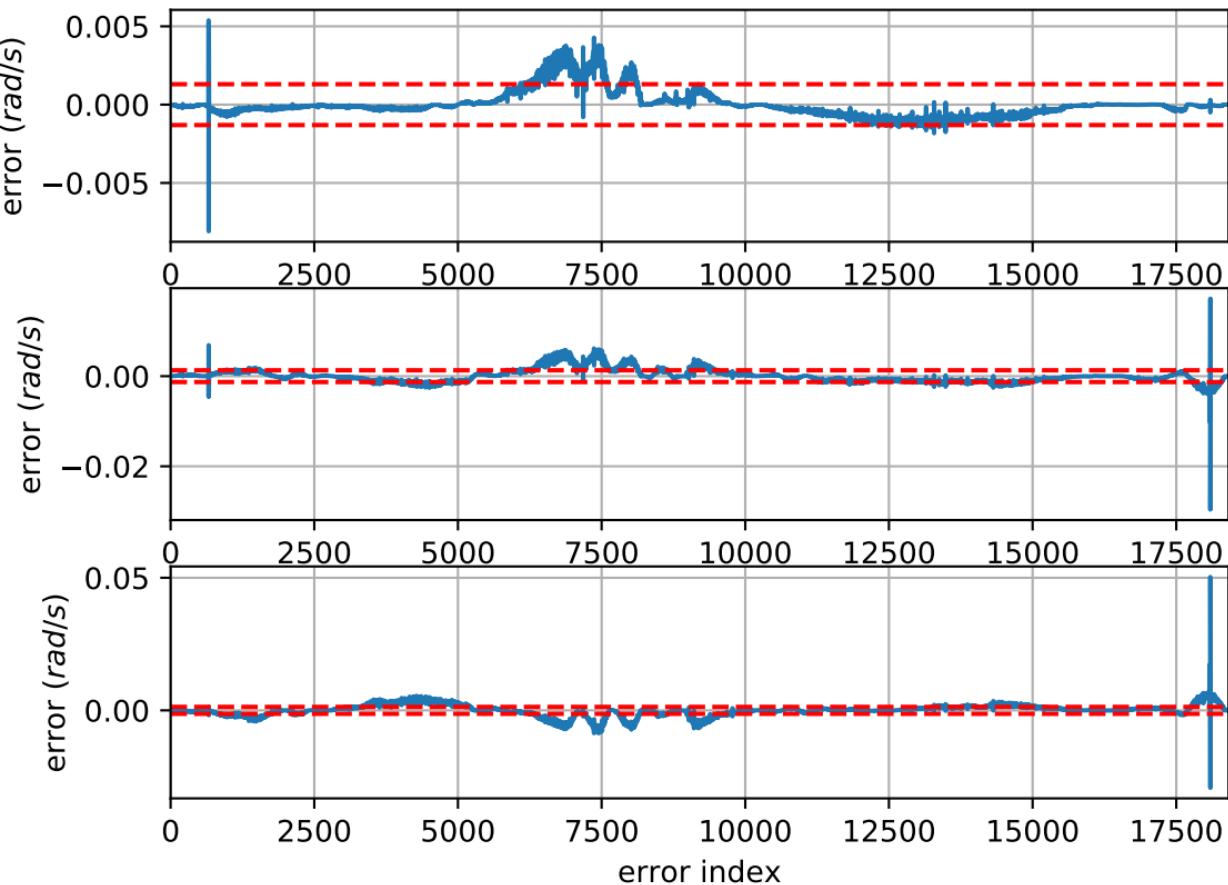
imu0: estimated accelerometer bias (imu frame)



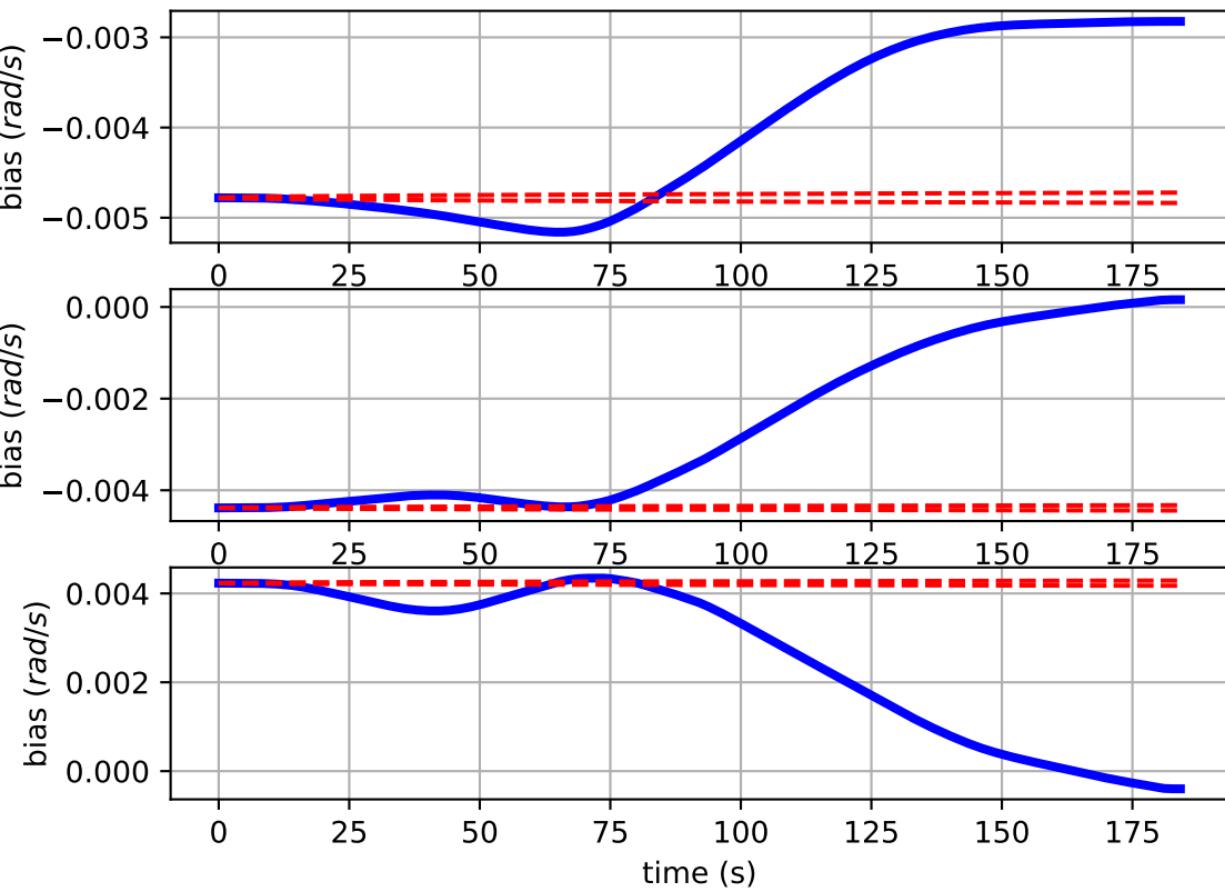
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

