

## Calibration results

=====

### Normalized Residuals

Reprojection error (cam0): mean 0.31058495494930427, median 0.2313904378470878, std: 0.2771024615507682  
Gyroscope error (imu0): mean 0.5209922324396123, median 0.36344228948613766, std: 0.4520093121295  
Accelerometer error (imu0): mean 0.48651167964782366, median 0.3575038796639378, std: 0.4503926048878672

### Residuals

Reprojection error (cam0) [px]: mean 0.31058495494930427, median 0.2313904378470878, std: 0.2771024615507682  
Gyroscope error (imu0) [rad/s]: mean 0.002246324476982516, median 0.0015670277981311466, std: 0.001948895815405876  
Accelerometer error (imu0) [m/s^2]: mean 0.13179150485328545, median 0.09684448752783195, std: 0.12200718226524647

### Transformation (cam0):

-----  
T\_ci: (imu0 to cam0):

[[-0.48716476 -0.87303844 0.02178004 -0.01680775]  
[-0.01605093 -0.01598441 -0.9997434 -0.03834472]  
[ 0.87316256 -0.48738934 -0.00622603 -0.05828894]  
[ 0. 0. 0. 1. ]]

T\_ic: (cam0 to imu0):

[[-0.48716476 -0.01605093 0.87316256 0.04209211]  
[-0.87303844 -0.01598441 -0.48738934 -0.04369614]  
[ 0.02178004 -0.9997434 -0.00622603 -0.03833172]  
[ 0. 0. 0. 1. ]]

timeshift cam0 to imu0: [s] ( $t_{imu} = t_{cam} + \text{shift}$ )  
-0.0010432971322609352

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

[-0.00697989 -9.73132124 -1.21233706]

## Calibration configuration

=====

cam0

-----

Camera model: pinhole

Focal length: [401.29630399733867, 401.1902935396403]

Principal point: [321.56571482447936, 244.98294608938468]

Distortion model: radtan

Distortion coefficients: [-0.34663205730388935, 0.10816545694746758, -0.0013793000548484723, 0.0011998744222886772]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.088 [m]

Spacing 0.026399999999999996 [m]

## IMU configuration

=====

IMU0:

-----

Model: calibrated

Update rate: 100

Accelerometer:

Noise density: 0.027089073164427782

Noise density (discrete): 0.2708907316442778

Random walk: 0.0026405437265548015

Gyroscope:

Noise density: 0.0004311627577370619

Noise density (discrete): 0.0043116275773706185

Random walk: 5.5971879319209416e-05

T\_ib (imu0 to imu0)

[[1. 0. 0. 0.]

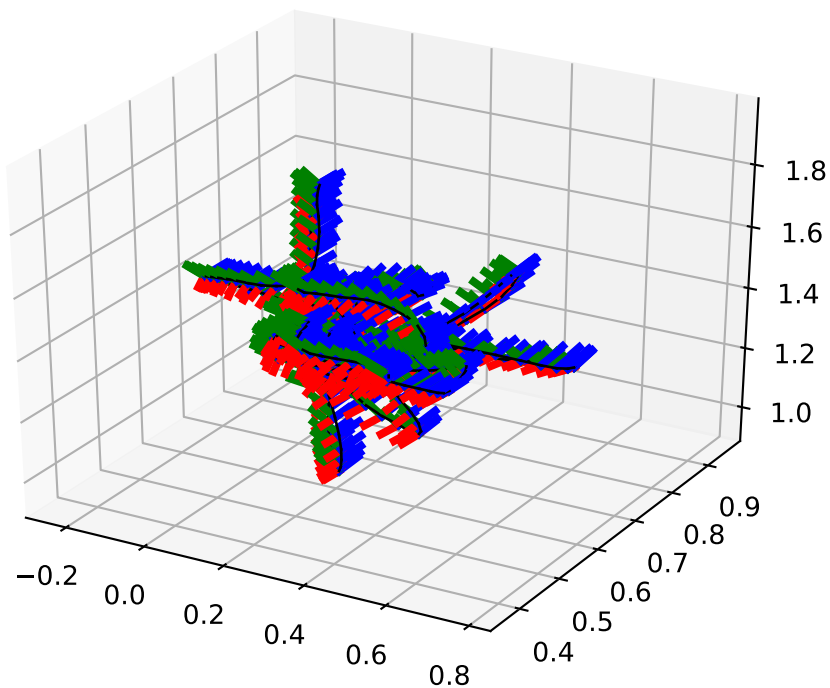
[0. 1. 0. 0.]

[0. 0. 1. 0.]

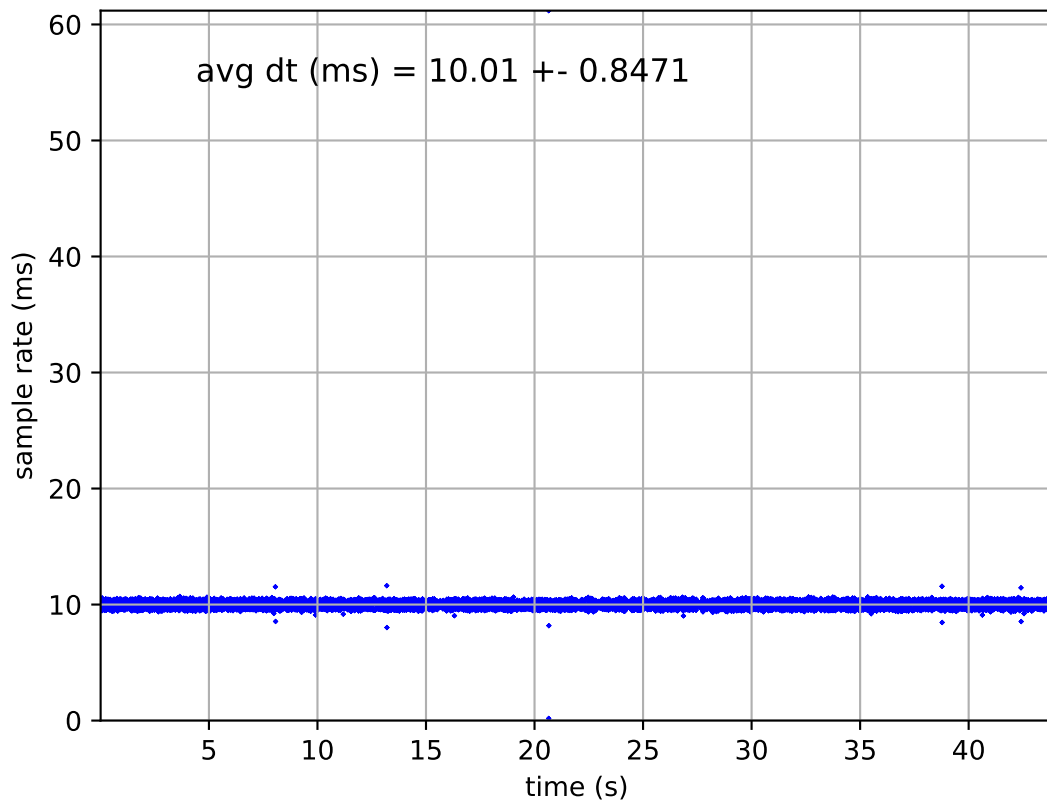
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

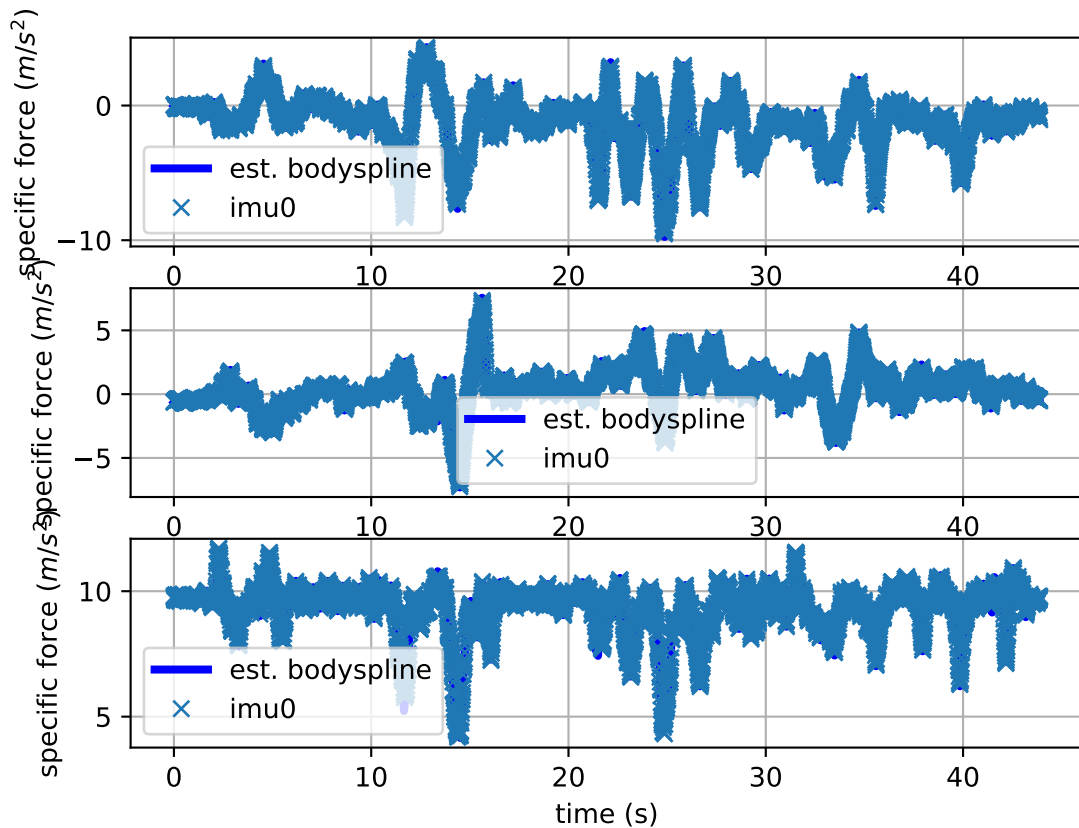
imu0: estimated poses



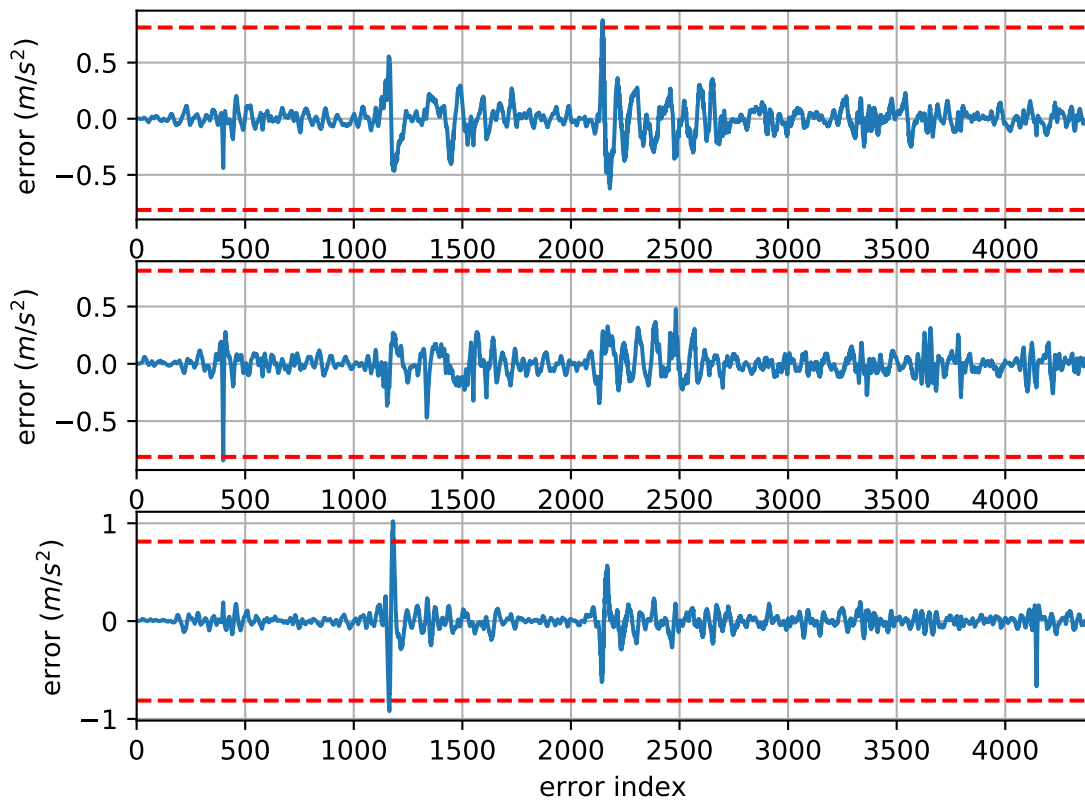
# imu0: sample inertial rate



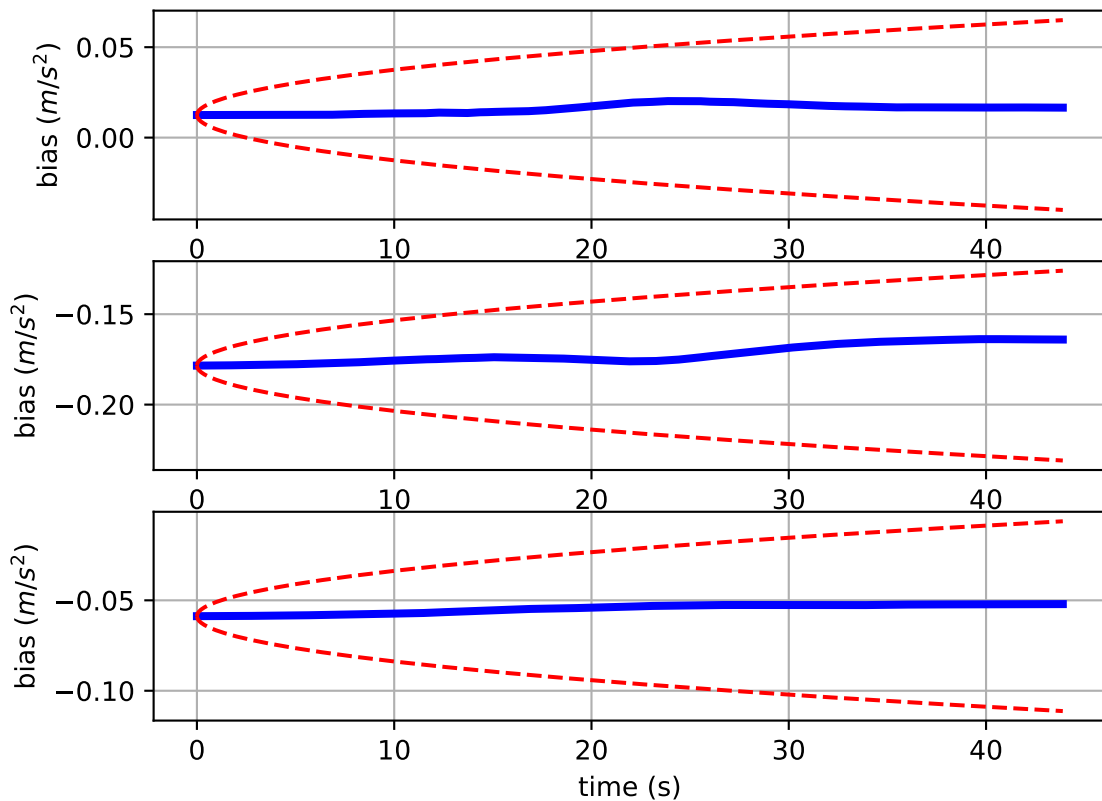
# Comparison of predicted and measured specific force (imu0 frame)



imu0: acceleration error

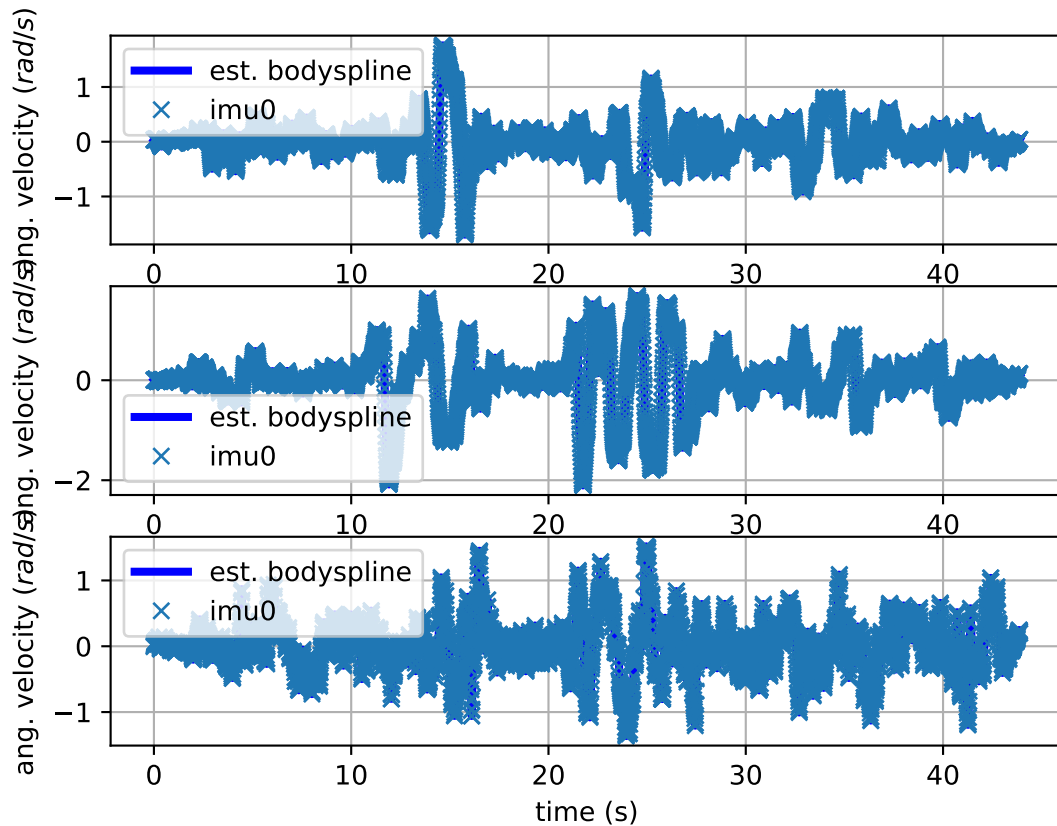


imu0: estimated accelerometer bias (imu frame)

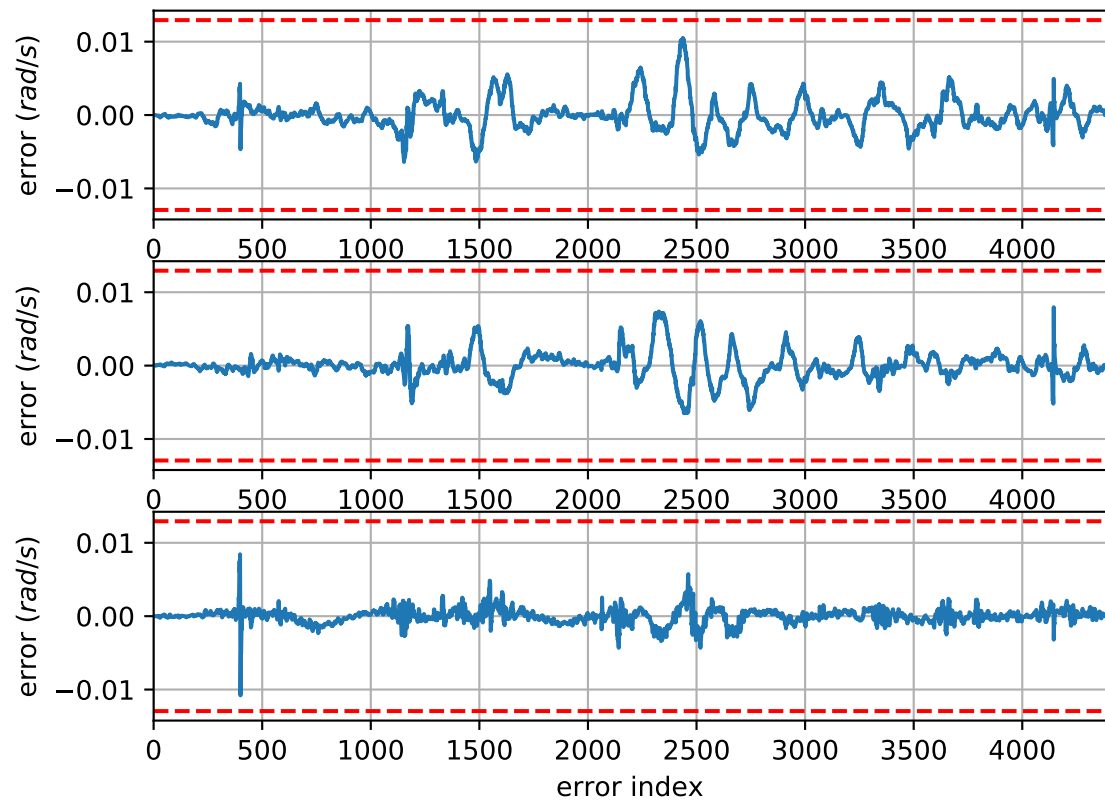




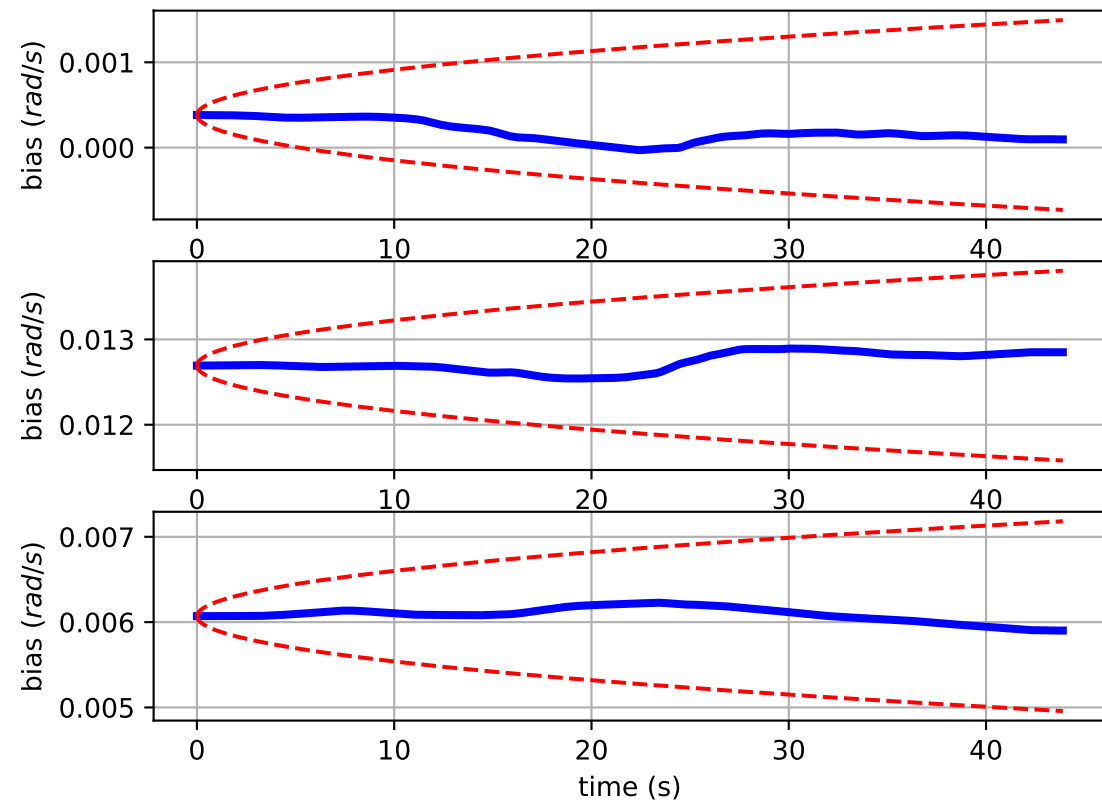
# Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

