

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 3.3057651131689867, median 3.329705658657143, std: 0.7732085878729255
Reprojection error (cam1): mean 3.319105444569289, median 3.3534355672548477, std: 0.7514807522504401
Gyroscope error (imu0): mean 0.7013615251303572, median 5.156457318200121e-07, std: 2.368973253519295
Accelerometer error (imu0): mean 0.6790762449148137, median 2.8480530327795696e-07, std: 3.3538313129361654

Residuals

Reprojection error (cam0) [px]: mean 3.3057651131689867, median 3.329705658657143, std: 0.7732085878729255
Reprojection error (cam1) [px]: mean 3.319105444569289, median 3.3534355672548477, std: 0.7514807522504401
Gyroscope error (imu0) [rad/s]: mean 0.001706024967261571, median 1.254281082189817e-09, std: 0.005762402658924899
Accelerometer error (imu0) [m/s^2]: mean 0.026890047392429846, median 1.1277714630881139e-08, std: 0.13280494440264487

Transformation (cam0):

T_ci: (imu0 to cam0):
[[-0.11725866 -0.86021066 0.49627414 -0.00094798]
[-0.20854666 0.50990769 0.83456722 -0.00289144]
[-0.97095762 -0.00563608 -0.23918515 0.00061214]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):
[[-0.11725866 -0.20854666 -0.97095762 -0.0001198]
[-0.86021066 0.50990769 -0.00563608 0.00066236]
[0.49627414 0.83456722 -0.23918515 0.00302998]
[0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
-2.8254237047250337

Transformation (cam1):

T_ci: (imu0 to cam1):
[[-0.11818209 -0.85851172 0.49898961 0.04810403]
[-0.20874013 0.51276181 0.8327682 -0.00370101]
[-0.97080407 -0.00574087 -0.23980511 0.00158924]
[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):
[[-0.11818209 -0.20874013 -0.97080407 0.00645533]
[-0.85851172 0.51276181 -0.00574087 0.04320473]
[0.49898961 0.8327682 -0.23980511 -0.02054022]
[0. 0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
-2.842165143341344

Baselines:

Baseline (cam0 to cam1):
[[0.99999444 0.00332512 0.00023754 0.04906147]
[-0.00332526 0.99999429 0.00060206 -0.0008131]
[-0.00023553 -0.00060285 0.99999979 0.00097513]
[0. 0. 0. 1.]]
baseline norm: 0.04907789938876993 [m]

Gravity vector in target coords: [m/s^2]
[-5.35988188 8.21180718 -0.07944763]

Calibration configuration
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cam0

Camera model: pinhole
Focal length: [368.82019560326995, 369.5382255914917]
Principal point: [477.66069551985345, 267.75087100589474]
Distortion model: radtan
Distortion coefficients: [-0.08394907413032725, 0.007009491689815073, 0.00030678763098987866,
0.002378055084910331]
Type: aprilgrid
Tags:
Rows: 6
Cols: 10
Size: 0.04 [m]
Spacing 0.00048 [m]

cam1

Camera model: pinhole
Focal length: [371.1897851022322, 372.2493337285106]
Principal point: [473.10494521498015, 268.9200093631702]
Distortion model: radtan
Distortion coefficients: [-0.0800808596617461, 0.002826738256395078, 0.00037452015522339174,
0.004113971771778728]
Type: aprilgrid
Tags:
Rows: 6
Cols: 10
Size: 0.04 [m]
Spacing 0.00048 [m]

IMU configuration

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IMU0:

Model: calibrated
Update rate: 800.0

Accelerometer:

Noise density: 0.0014

Noise density (discrete): 0.03959797974644666

Random walk: 8e-05

Gyroscope:

Noise density: 8.6e-05

Noise density (discrete): 0.0024324473272817238

Random walk: 2.2e-06

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

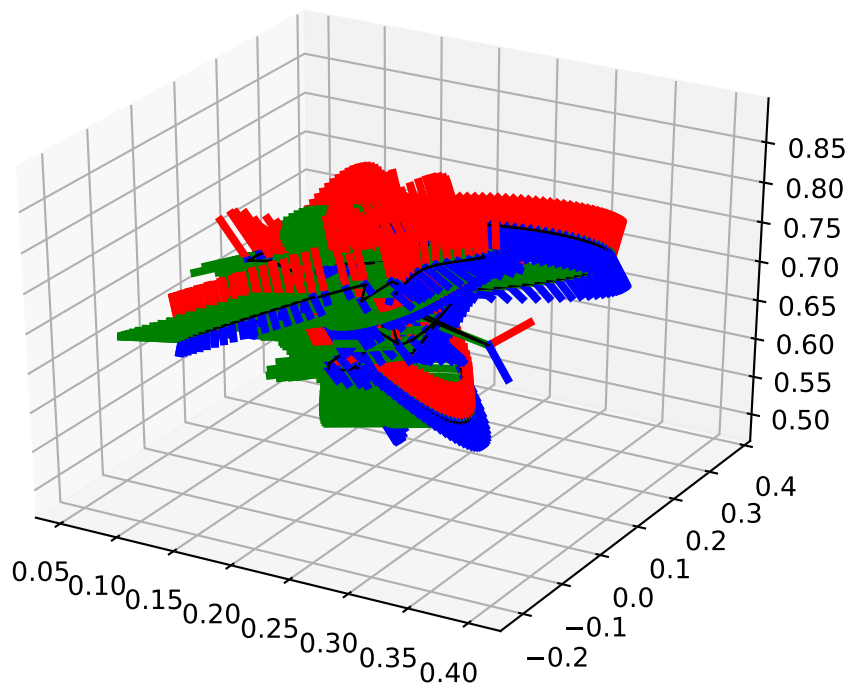
[0. 1. 0. 0.]

[0. 0. 1. 0.]

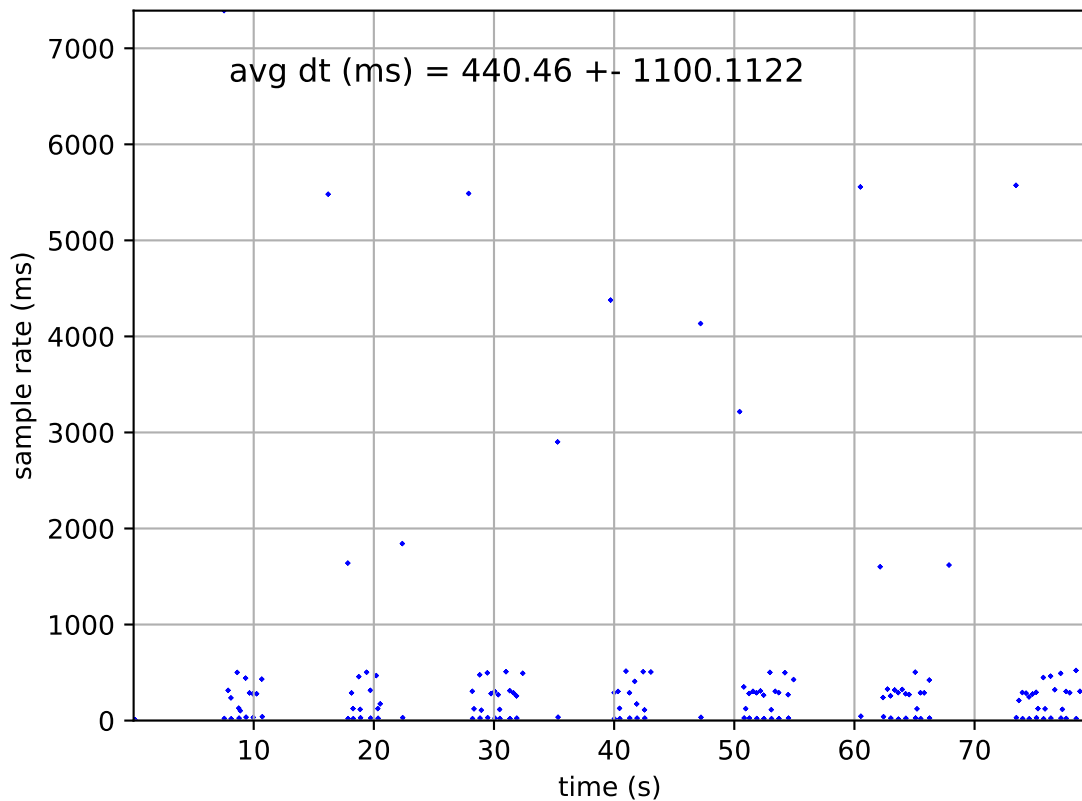
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

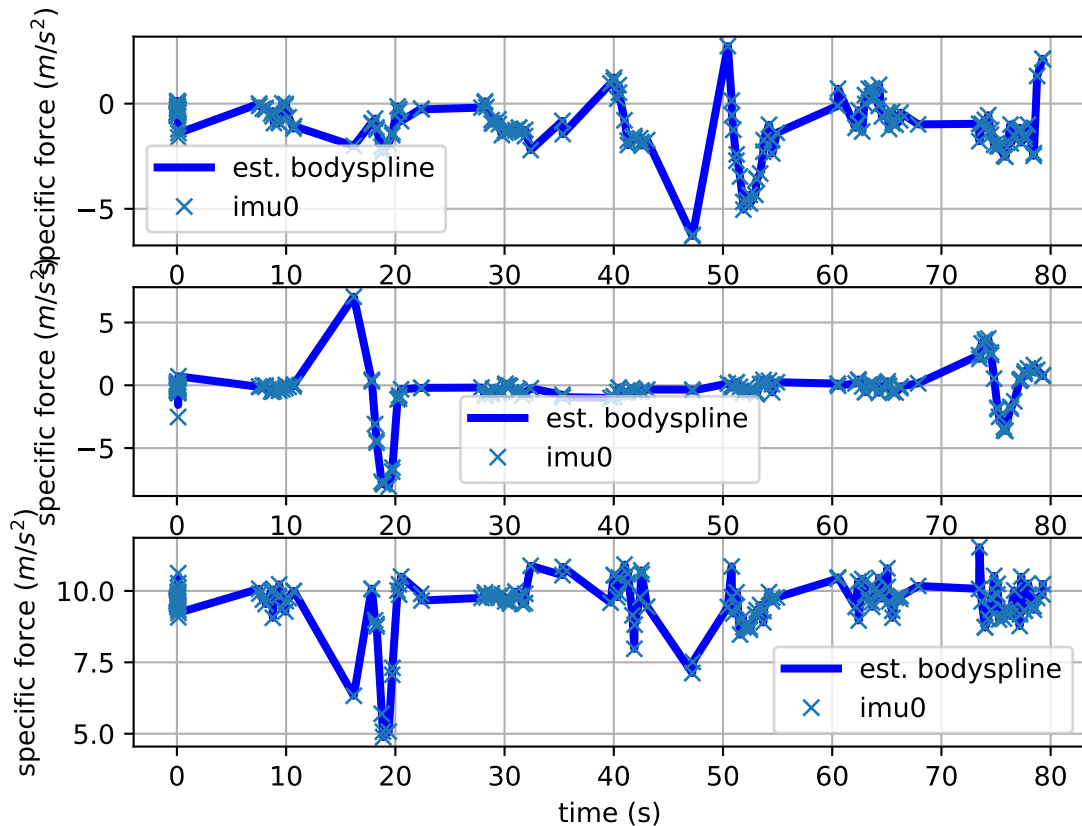
imu0: estimated poses



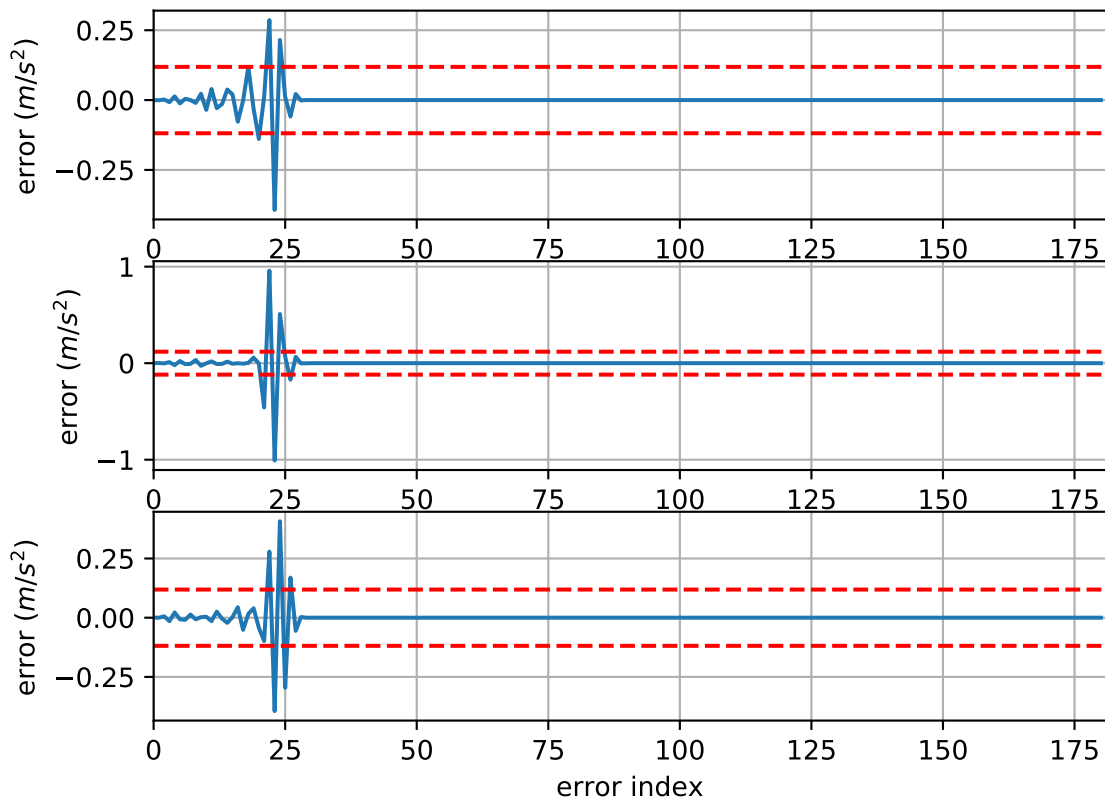
imu0: sample inertial rate



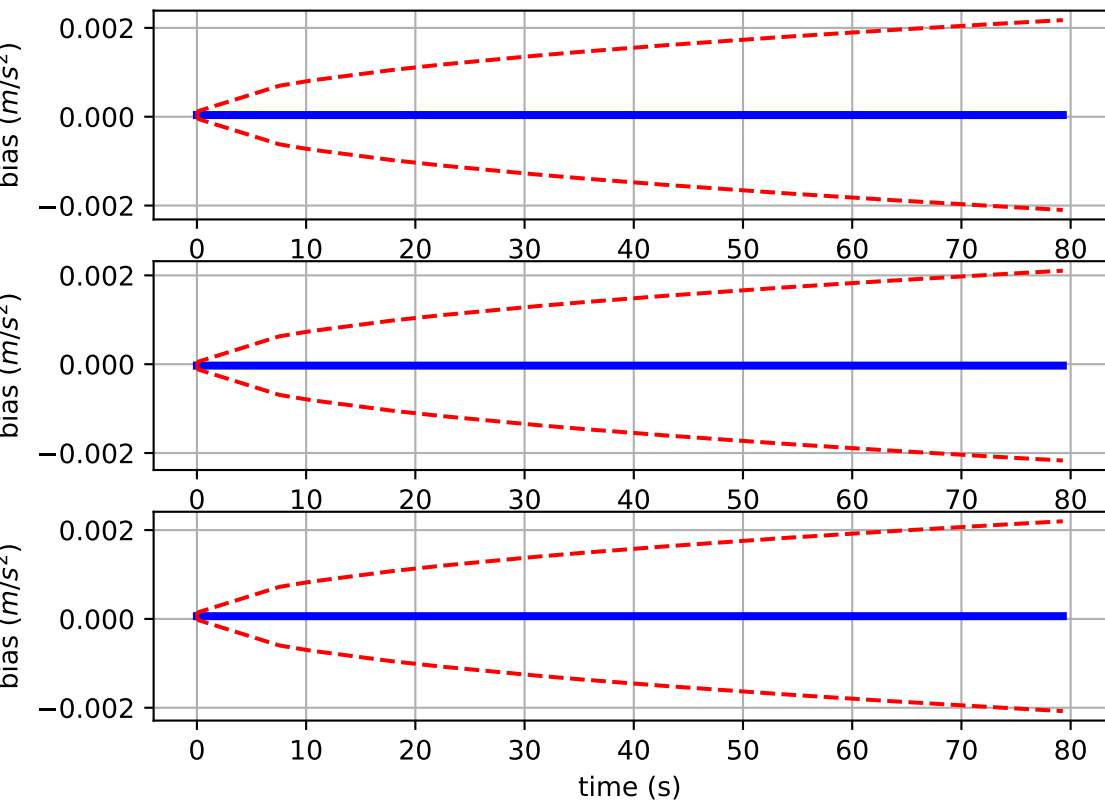
Comparison of predicted and measured specific force (imu0 frame)



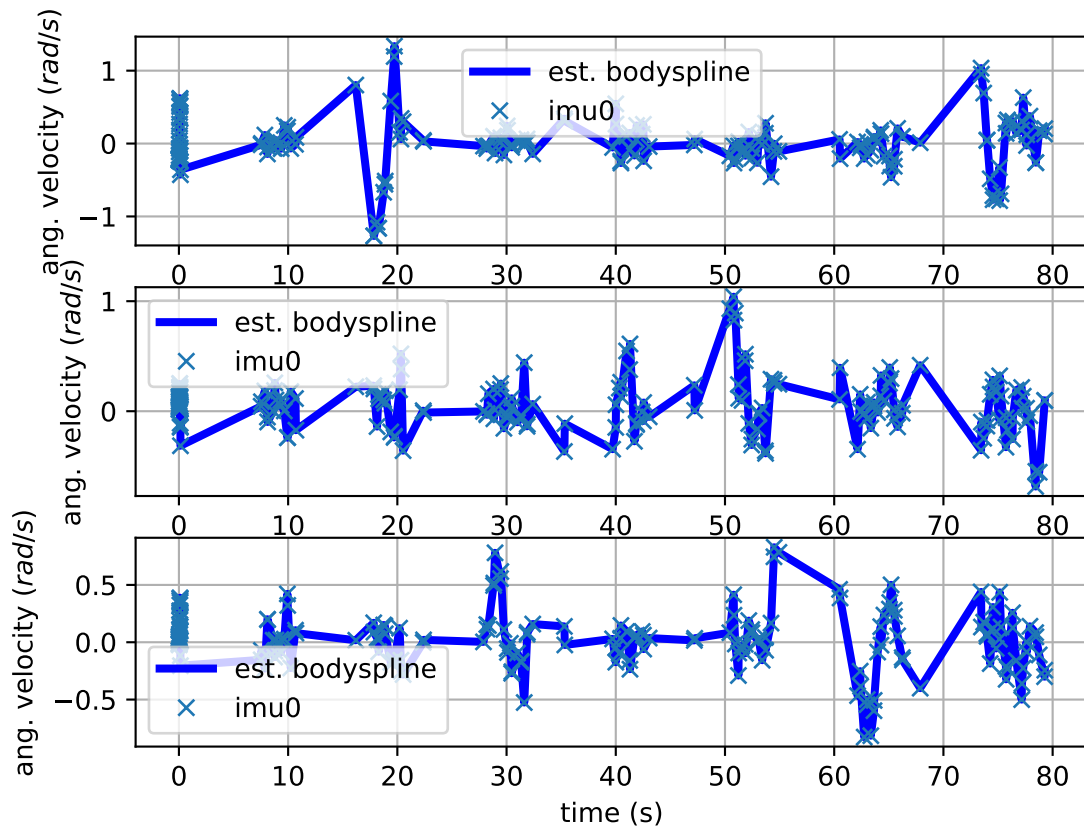
imu0: acceleration error



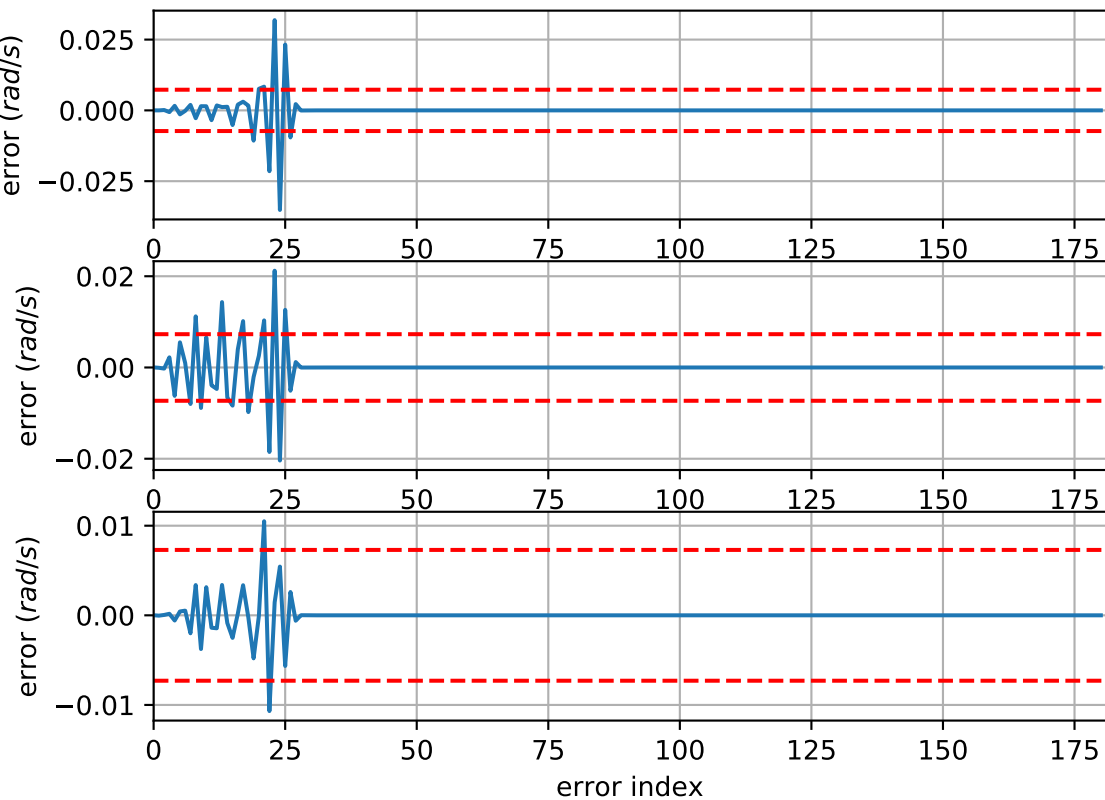
imu0: estimated accelerometer bias (imu frame)



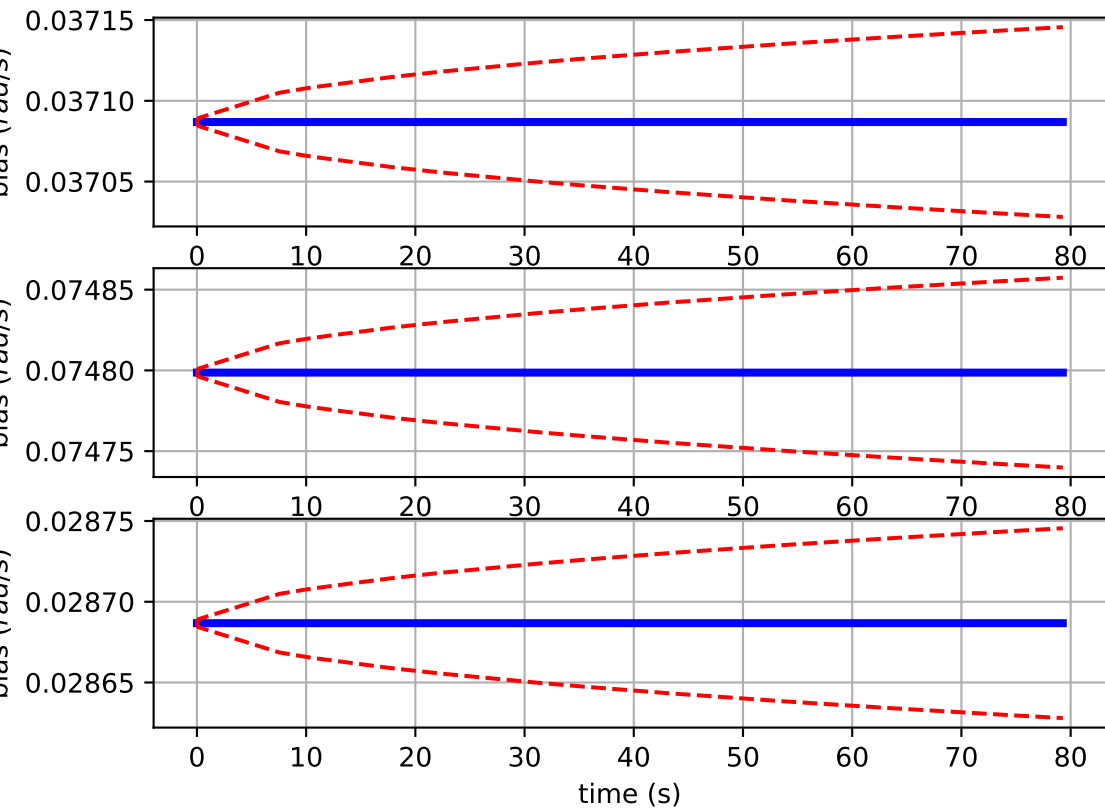
Comparison of predicted and measured angular velocities (body frame)



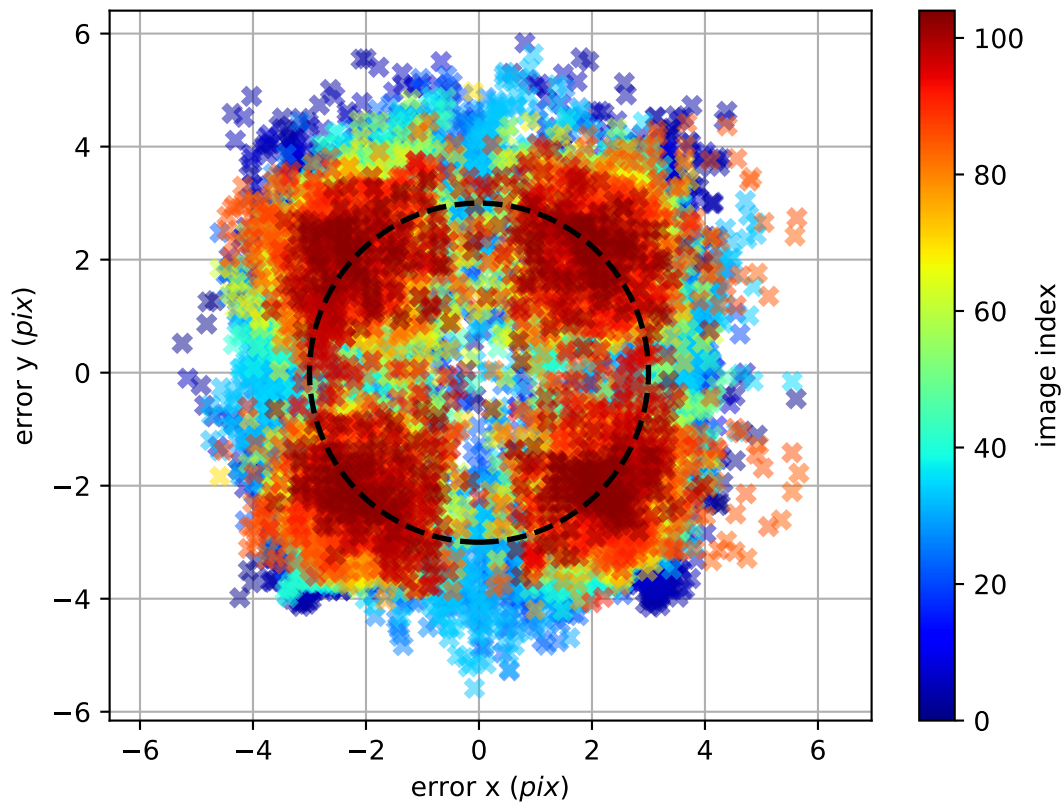
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

