F-16 Capstone

Sensor Noise Analysis

4/25/2021

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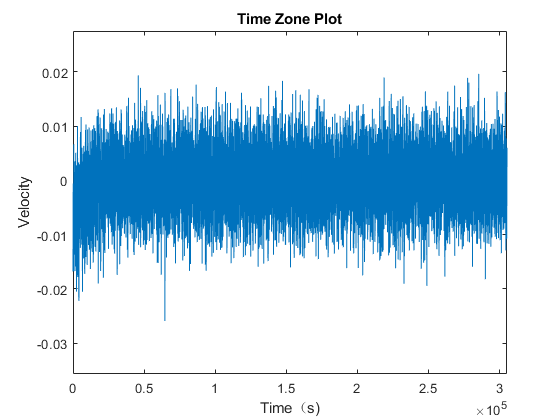
[c. Power Spectral Density Plot 20](#_Toc70303689)

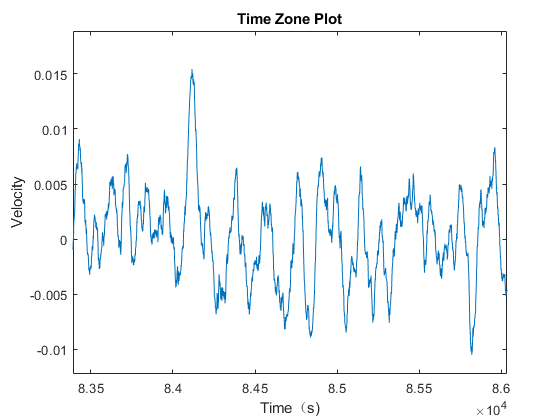
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1. IMU in PX4

1.1 Velocity (PX4)

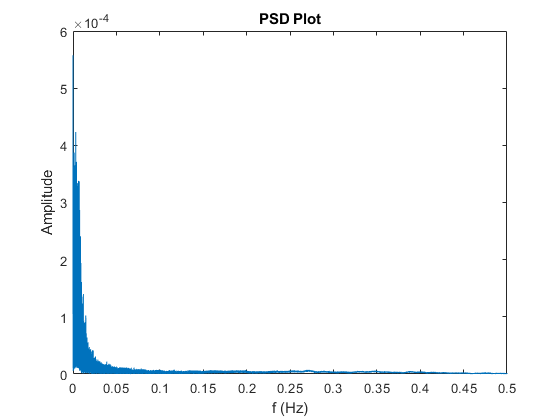
a. Time Zone Plot

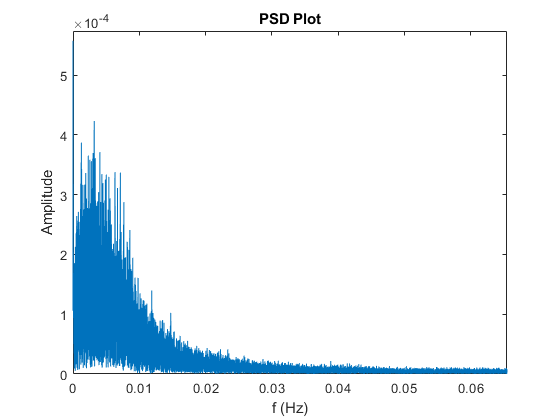


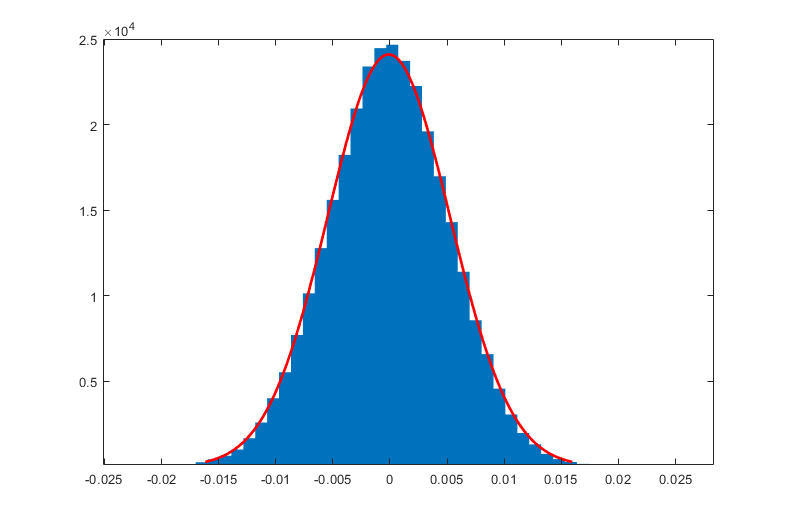


b. Mean Value and Standard Deviation

|  |  |
| --- | --- |
|  | Value |
| Mean Value | -1.06\*10-4 |
| Standard Deviation | 0.0054 |

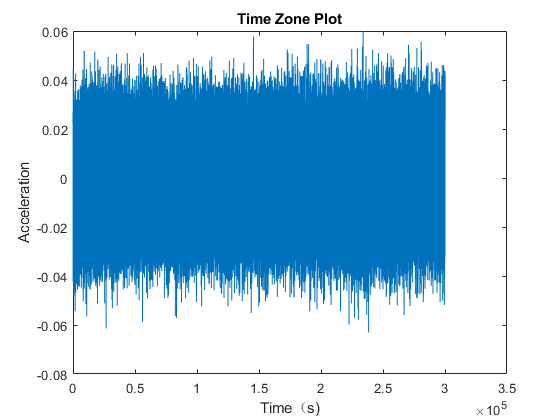
c. Power Spectral Density Plot

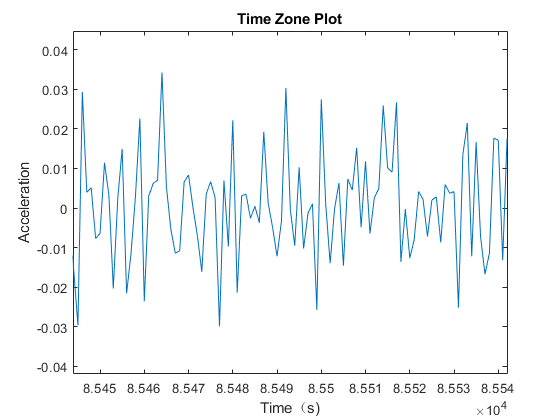


d. Distribution Histogram

1.2 Acceleration (PX4)

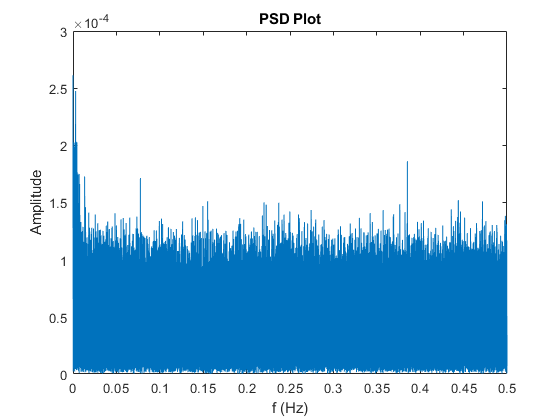
a. Time Zone Plot

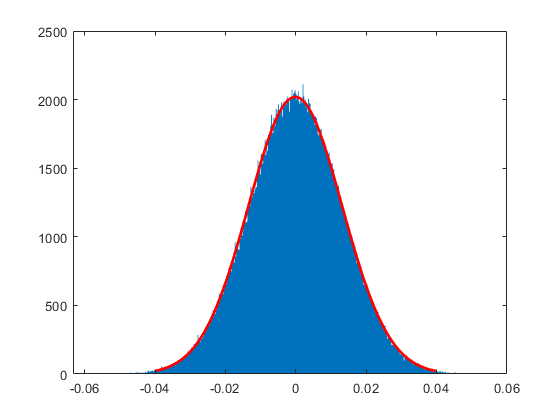




b. Mean Value and Standard Deviation

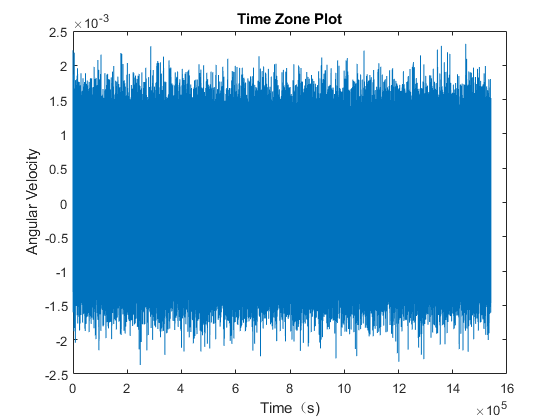
|  |  |
| --- | --- |
|  | Value |
| Mean Value | -1.28\*10-4 |
| Standard Deviation | 0.0133 |

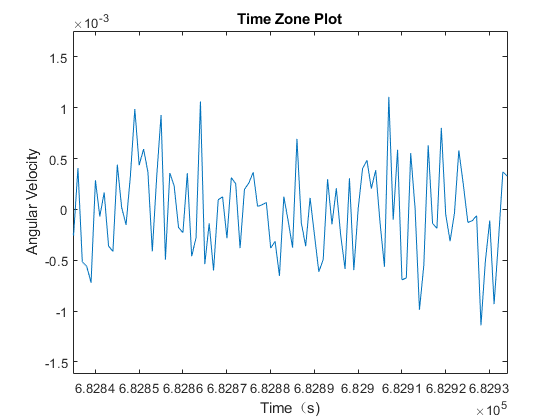
c. Power Spectral Density Plot

d. Distribution Histogram

1.3 Angular Velocity (PX4)

a. Time Zone Plot

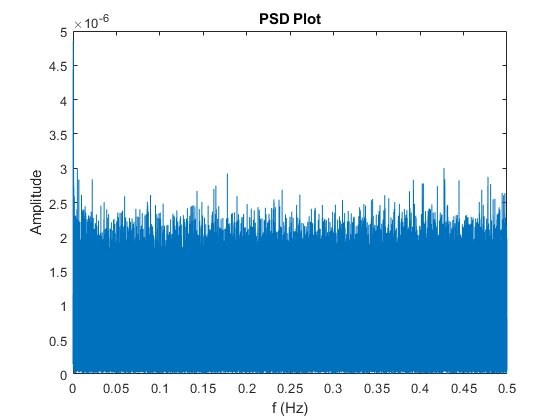


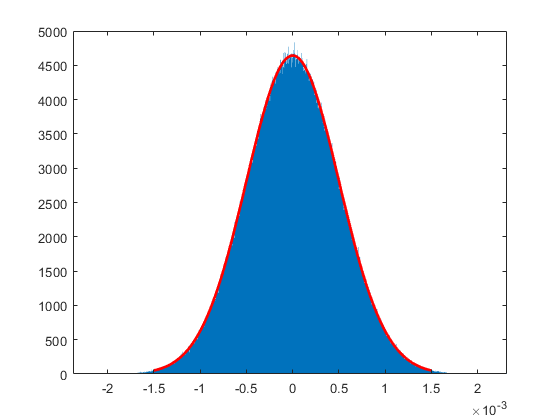


b. Mean Value and Standard Deviation

|  |  |
| --- | --- |
|  | Value |
| Mean Value | -5.59\*10-7 |
| Standard Deviation | 4.99\*10-4 |

c. Power Spectral Density Plot

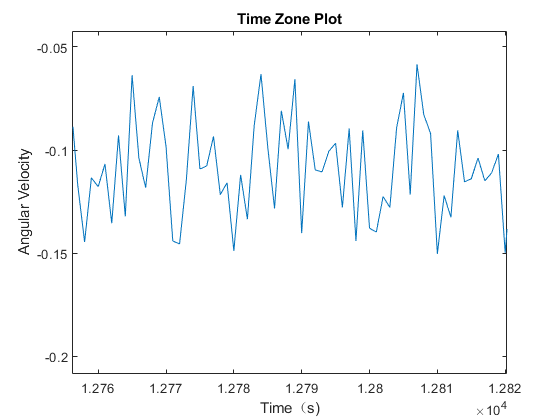
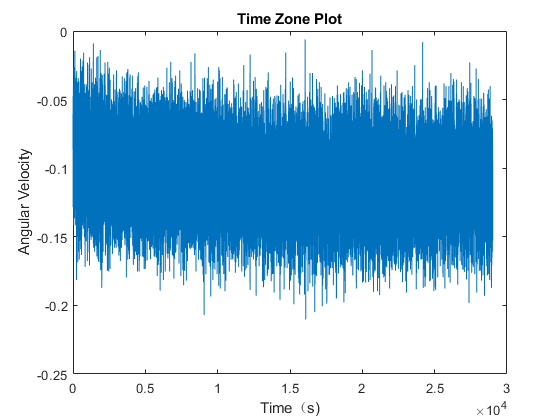


d. Distribution Histogram 

1. IMU Sensor

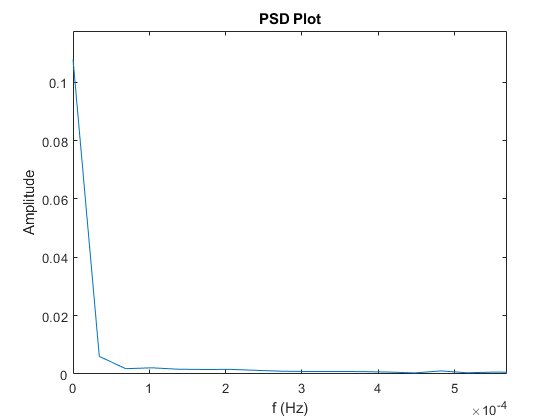
2.1 Acceleration (Sensor)

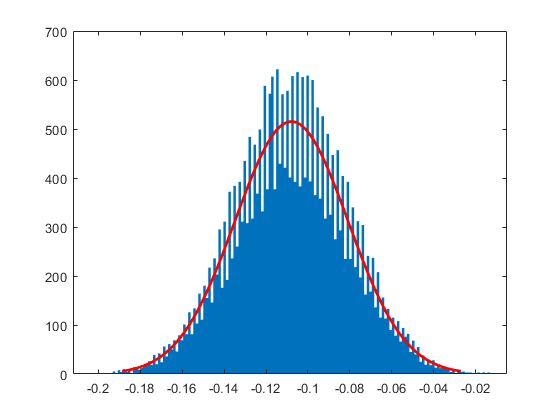
a. Time Zone Plot



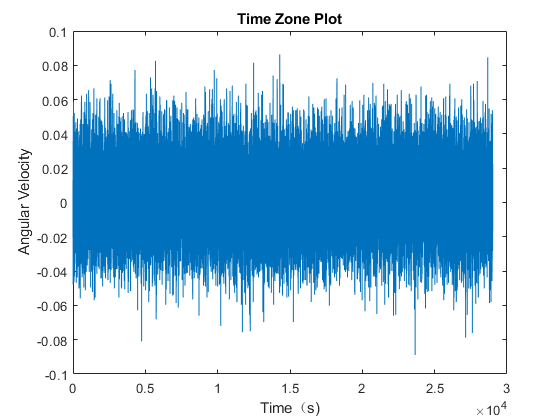
b. Mean Value and Standard Deviation

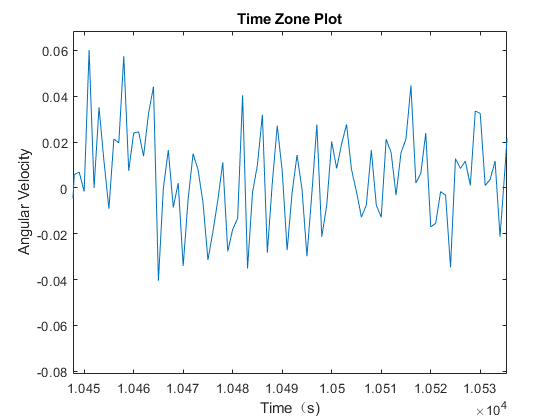
|  |  |
| --- | --- |
|  | Value |
| Mean Value | -0.108 |
| Standard Deviation | 0.0269 |

c. Power Spectral Density Plot

d. Distribution Histogram

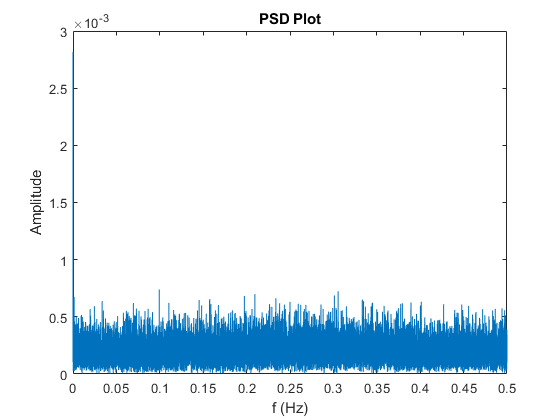
2.2 Angular Velocity (Sensor)

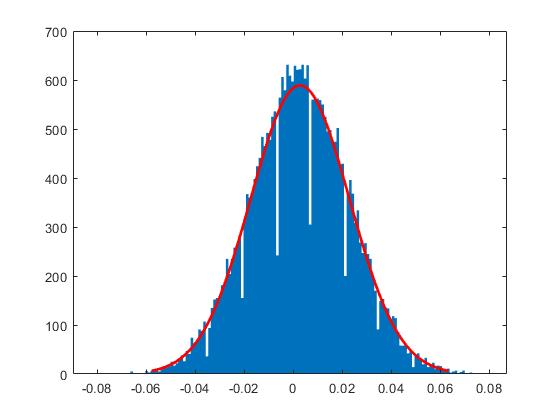
a. Time Zone Plot



b. Mean Value and Standard Deviation

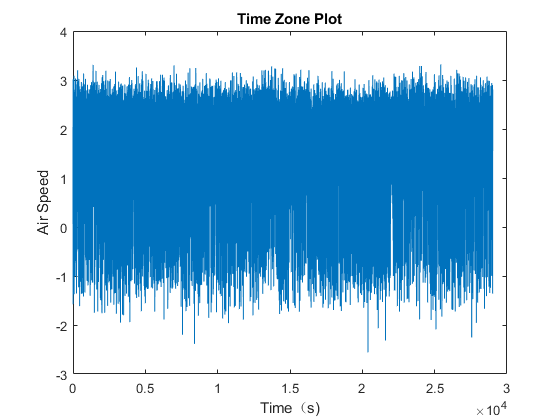
|  |  |
| --- | --- |
|  | Value |
| Mean Value | 0.0028 |
| Standard Deviation | 0.0202 |

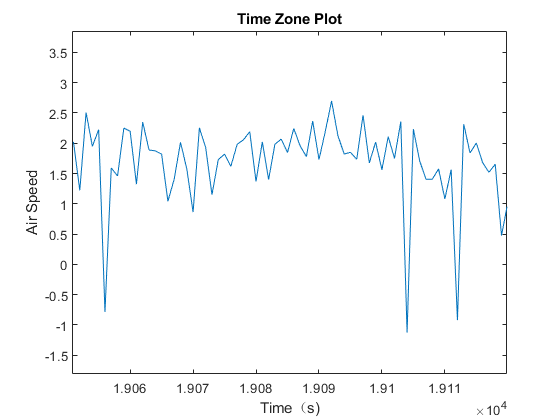
c. Power Spectral Density Plot

d. Distribution Histogram

1. Airspeed

a. Time Zone Plot

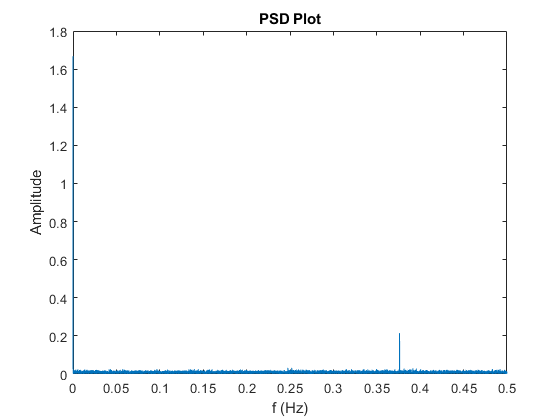


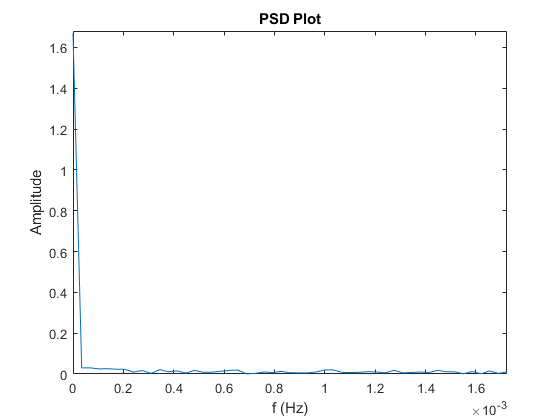


b. Mean Value and Standard Deviation

|  |  |
| --- | --- |
|  | Value |
| Mean Value | 1.668 |
| Standard Deviation | 0.812 |

c. Power Spectral Density Plot





d. Distribution Histogram