

# Photodiodes

## Channels

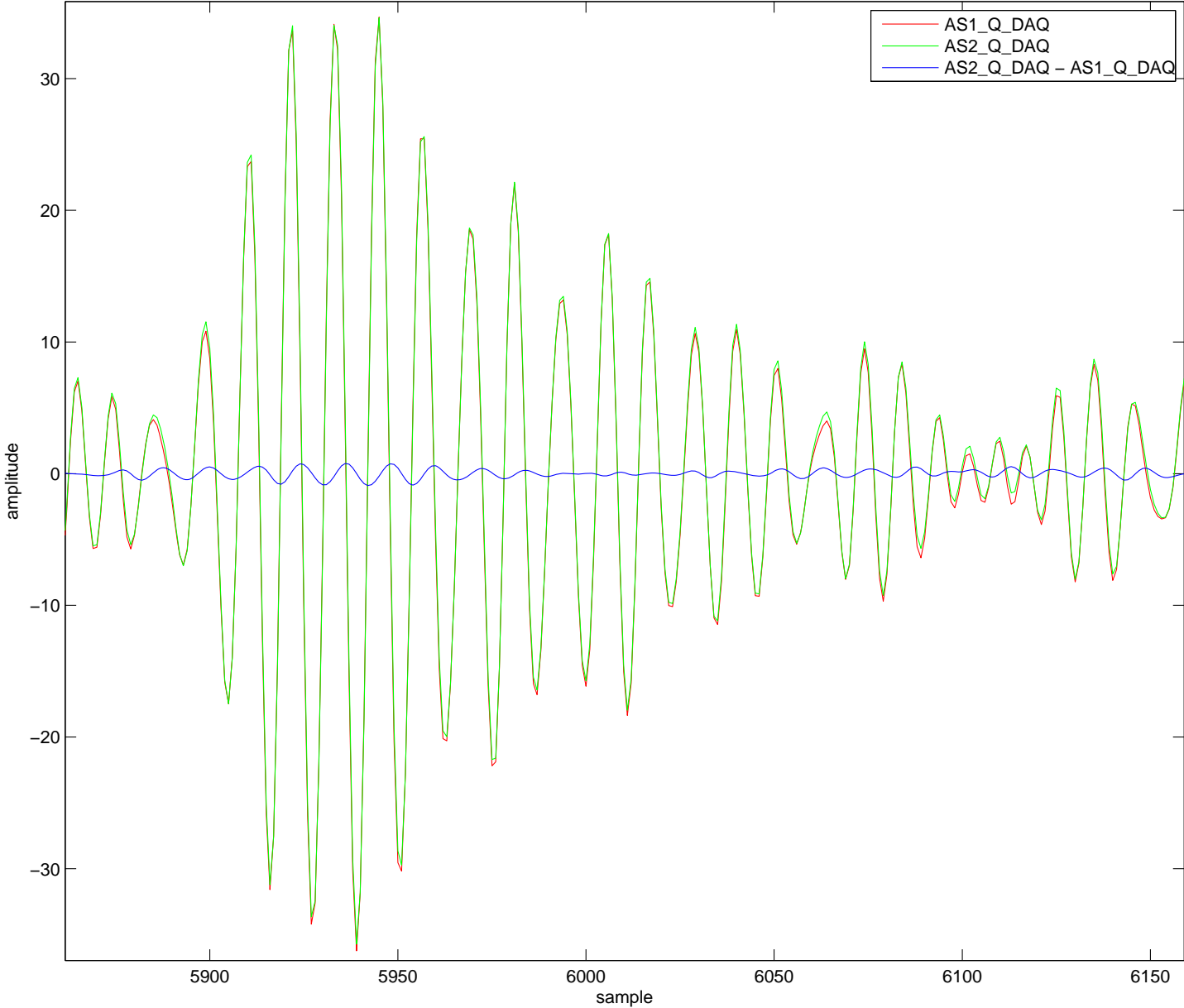
AS1\_Q\_DAQ

AS2\_Q\_DAQ

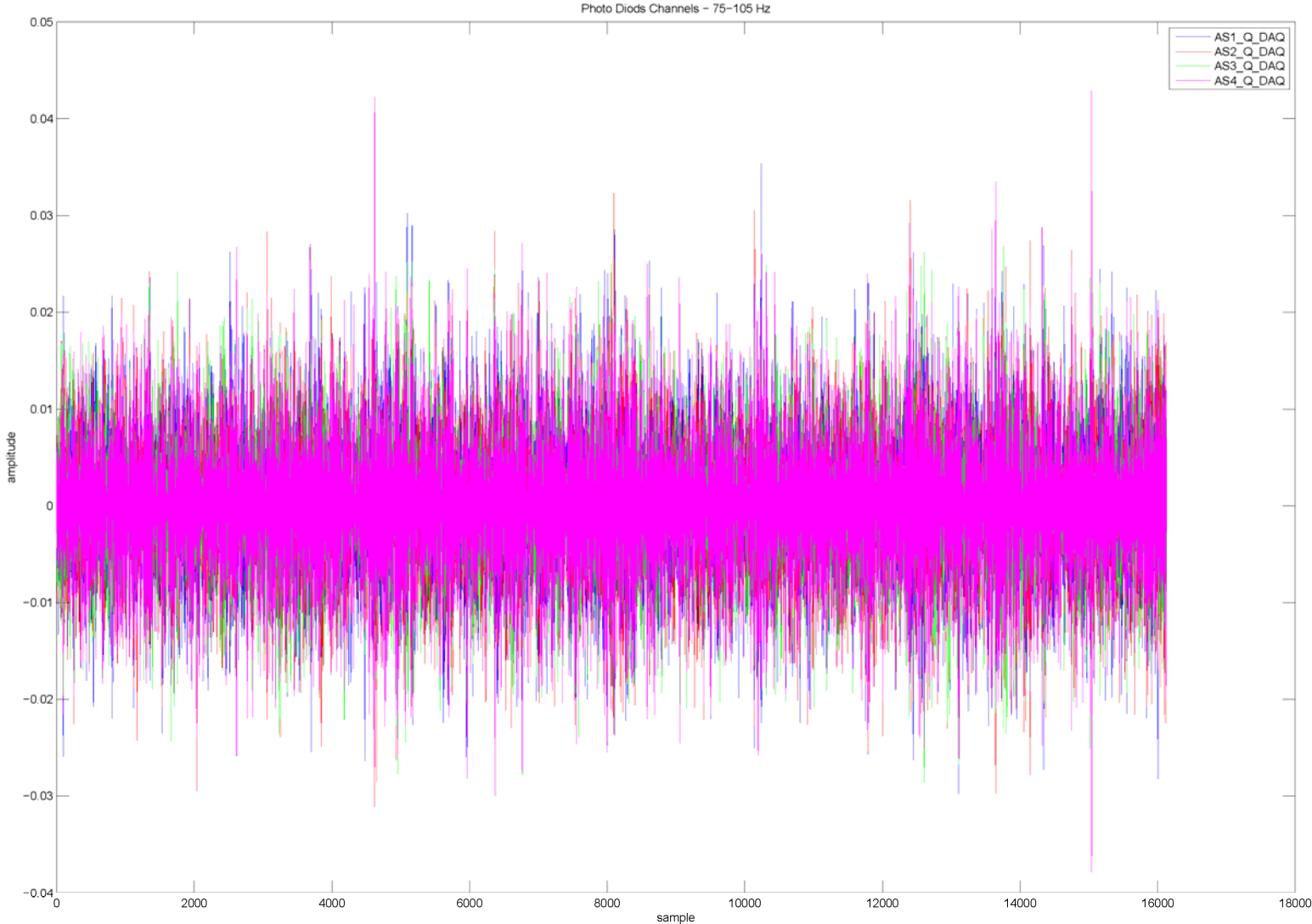
AS3\_Q\_DAQ

AS4\_Q\_DAQ

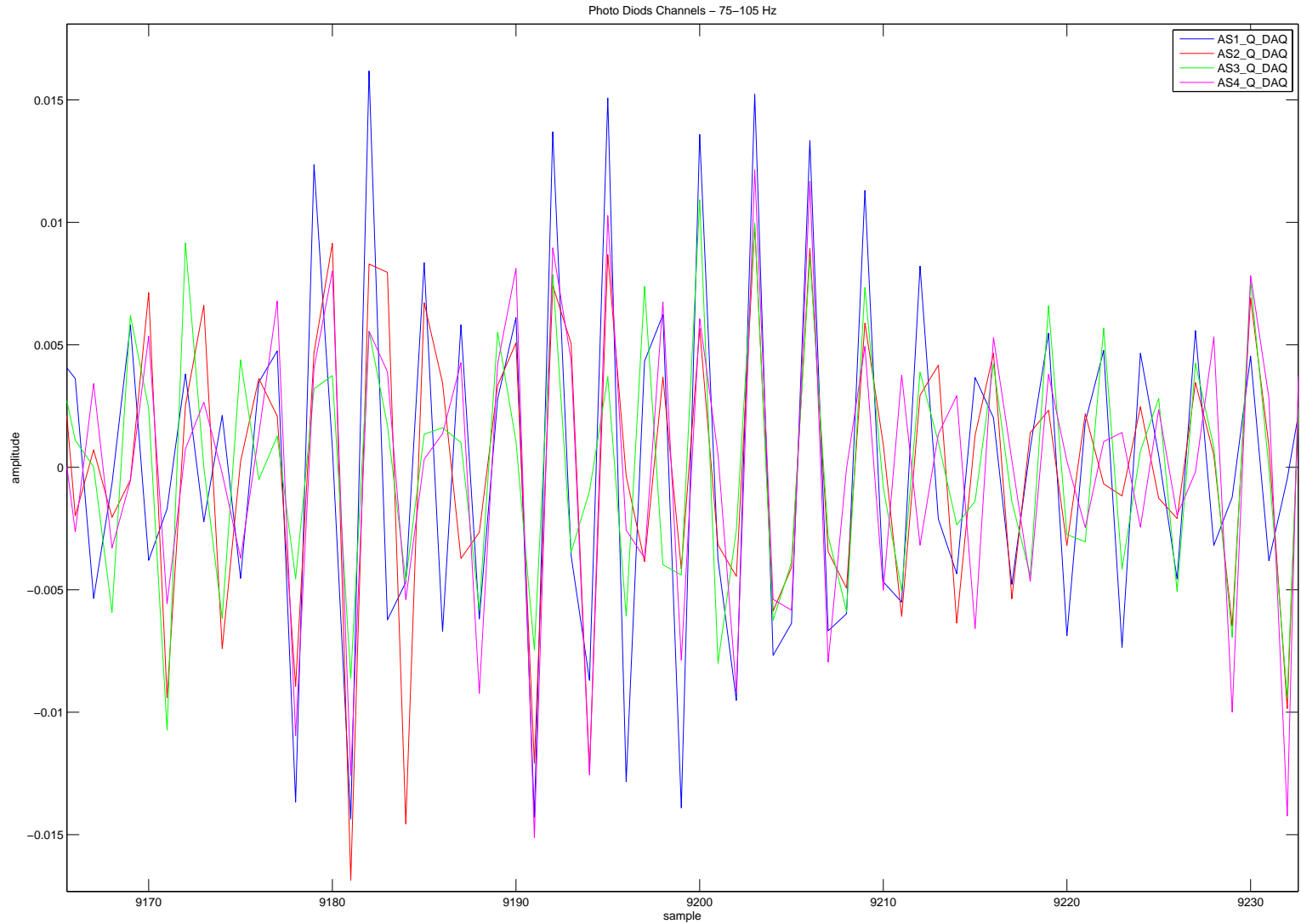
# Band-pass filter 20-50 Hz – zoom in



# Band-pass filter 75-105 Hz, quiet time segment



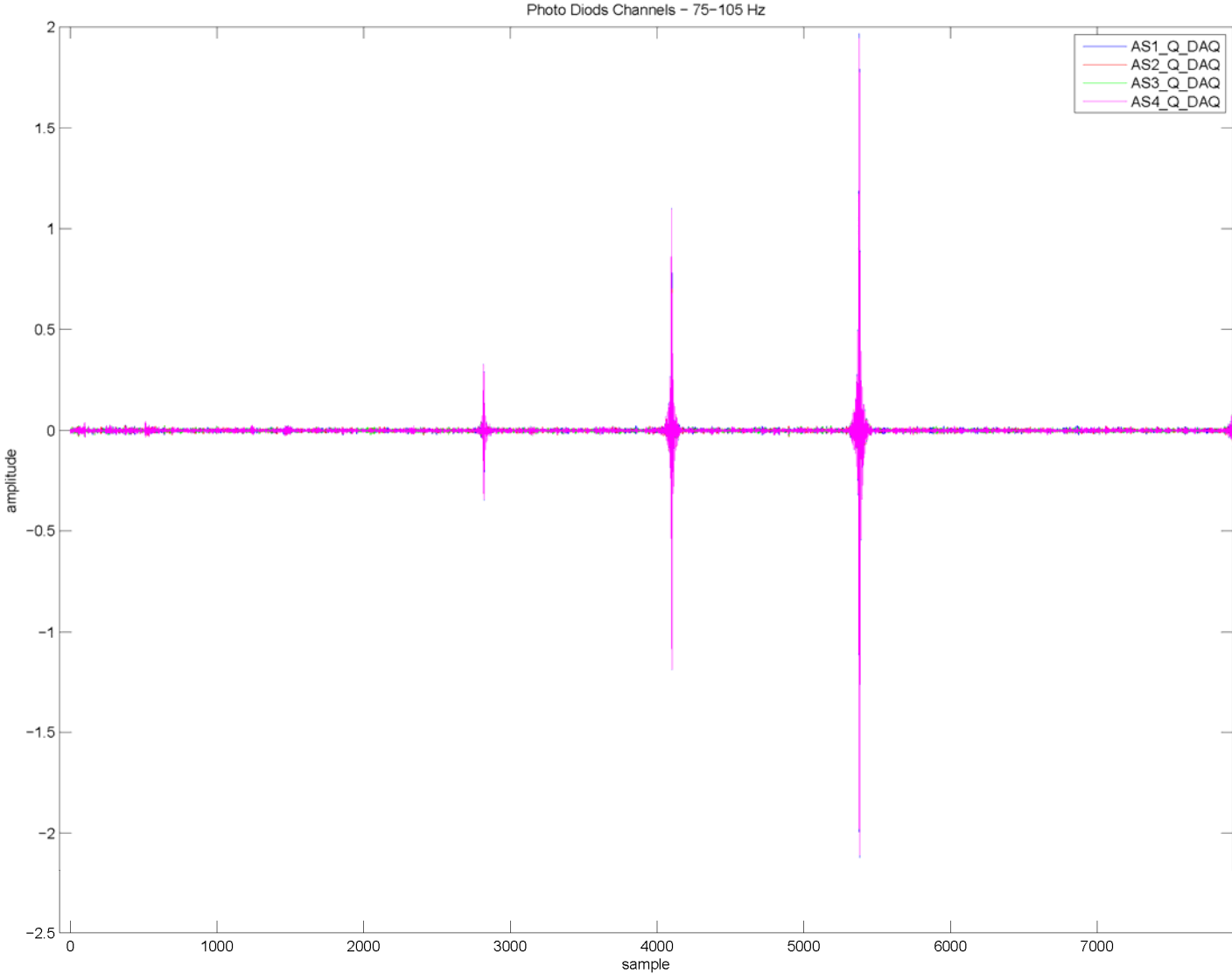
# Band-pass filter 75-105 Hz, same quiet time segment zoomed in



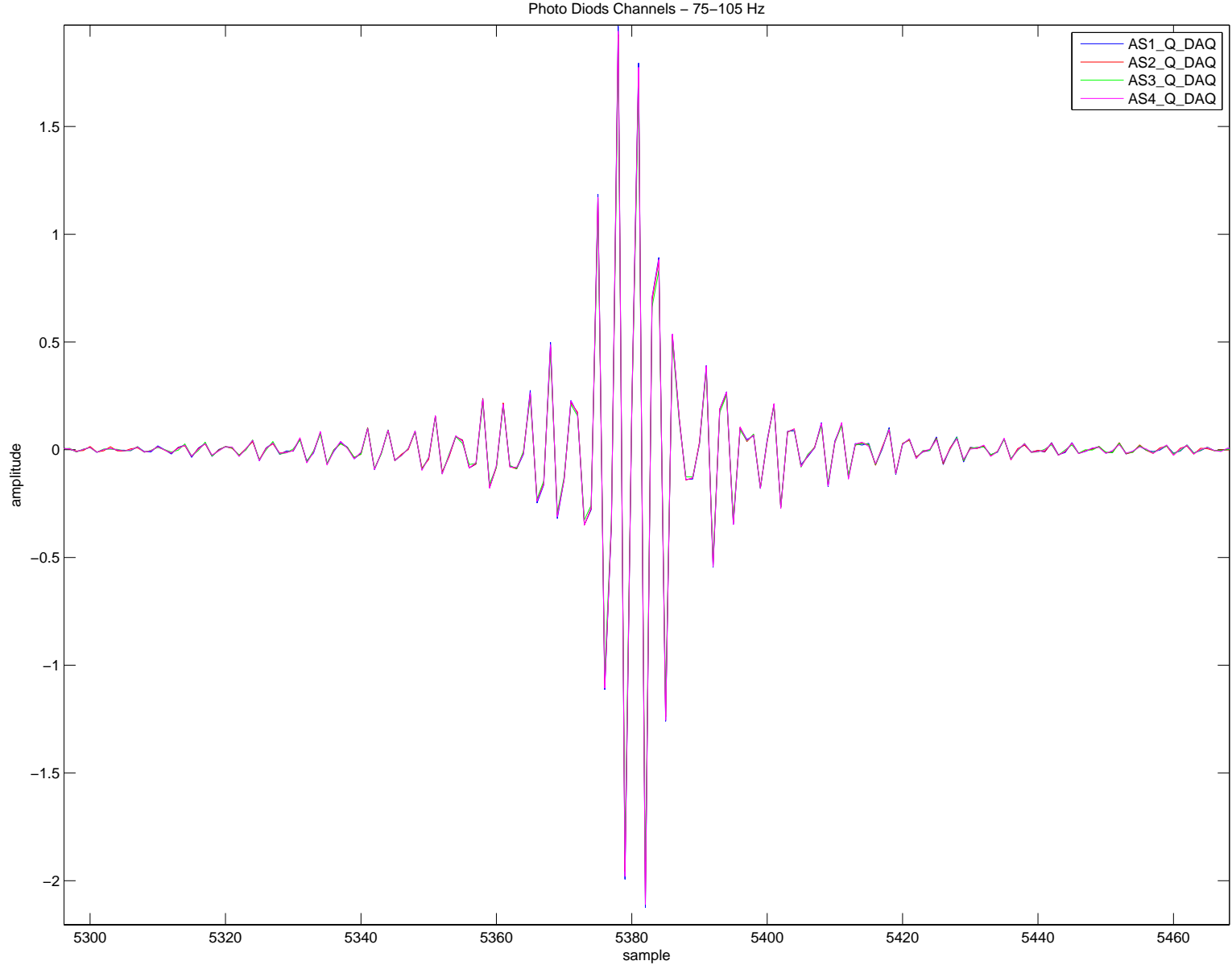
- Why freq. band 75 – 105 Hz?
  - Avoid 60 Hz line
  - Avoid 120 Hz line
  - Interesting freq. band for GW
  - Remember: AS#\_Q\_DDAQ are sampled at 256 Hz!
- Why AS#\_Q channels do not fit very well in this frequency band?
  - If there were only shot-dark noise, they will not fit at all!
  - Channels fit well if there is a signal in the light
  - Note: noise budget for this freq. range, e.g. some upconversion, seismic noise, ...

- Note: Only in the presence of a signal in the light, the photodiodes at the freq. range 75-105 Hz show a very similar signal.
- Example: Burst injection

# Band-pass filter 75-105 Hz, burst injection

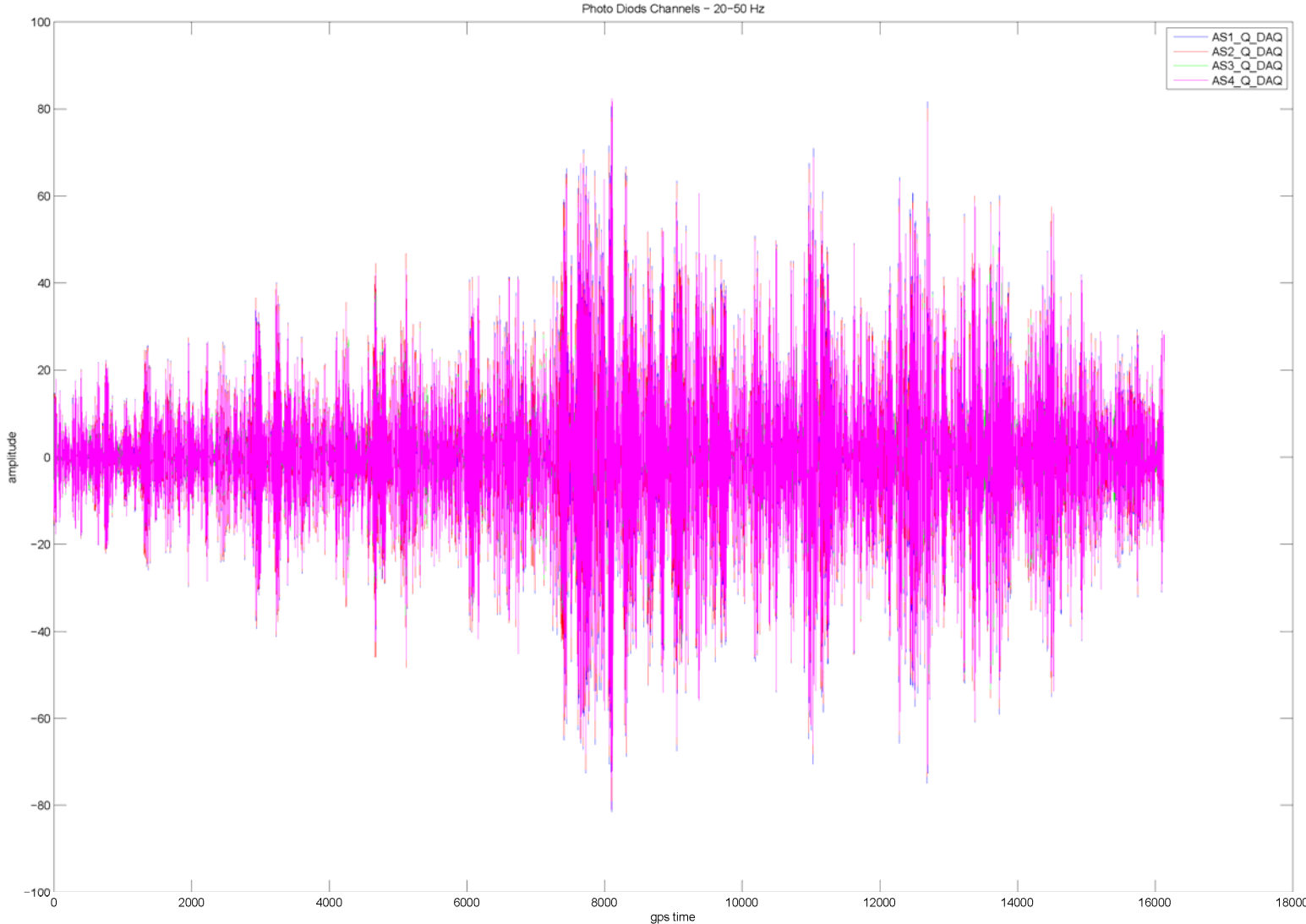


# Band-pass filter 75-105 Hz, burst injection, zoom-in

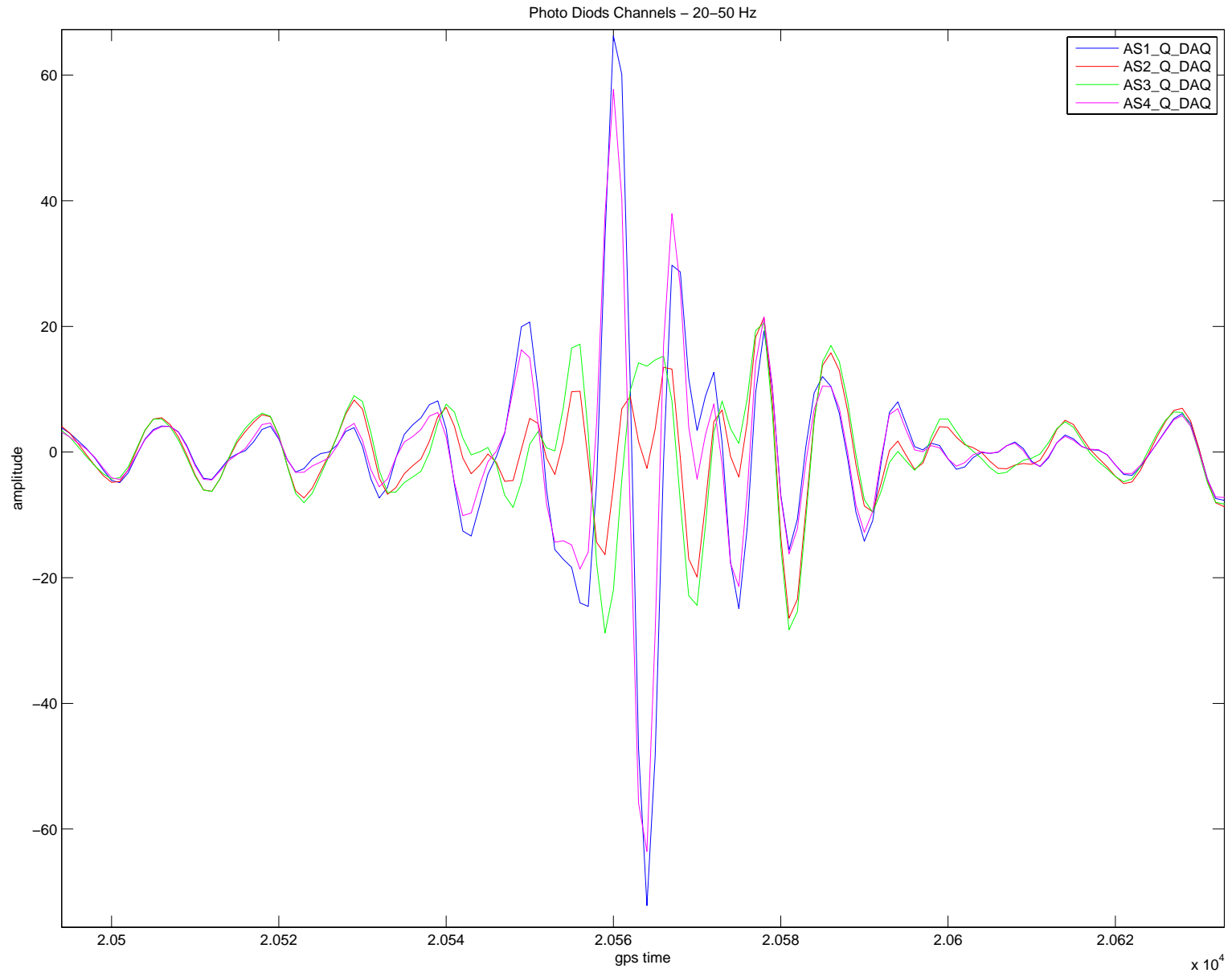




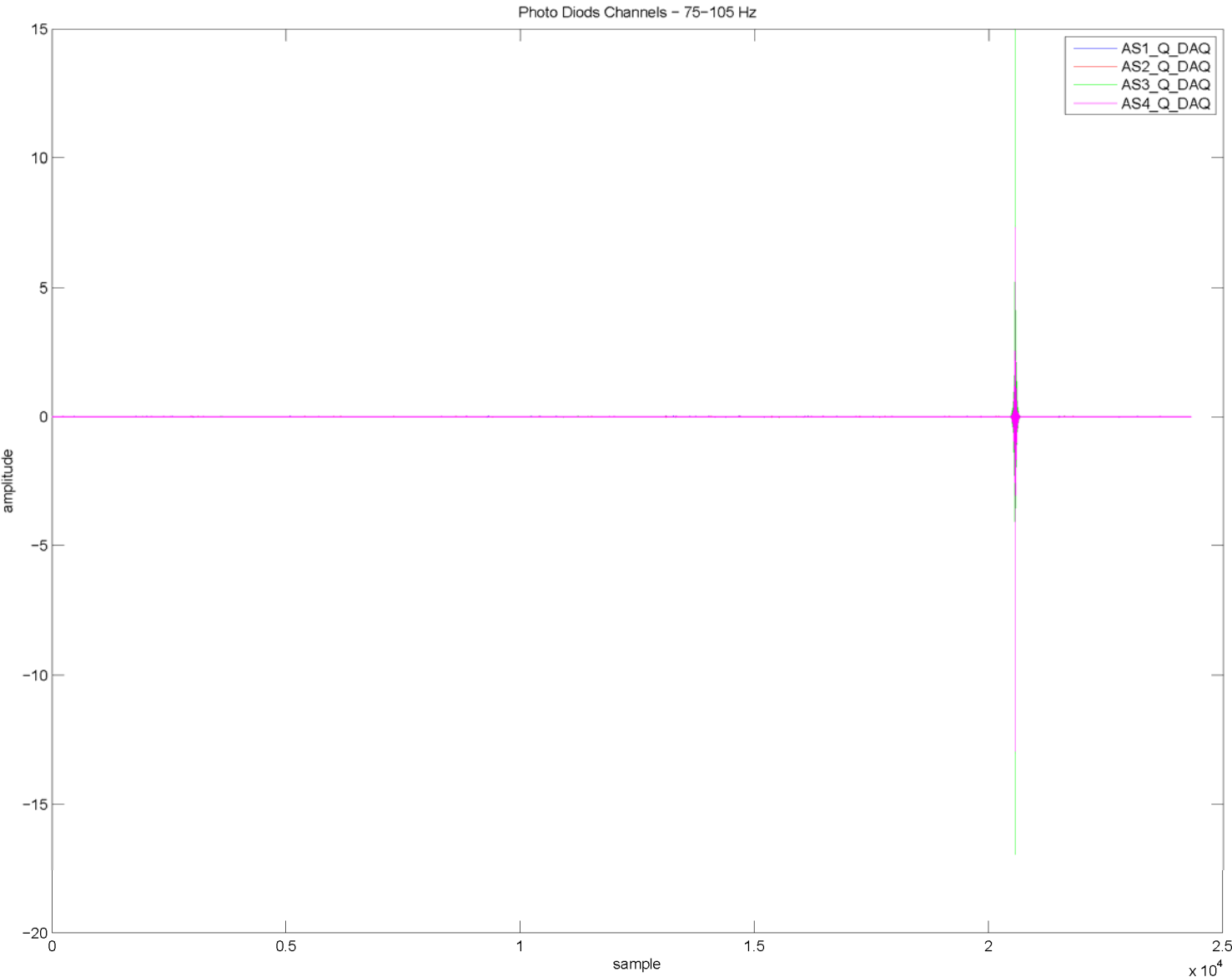
# Glitch at 865163824, freq. band 20-50 Hz



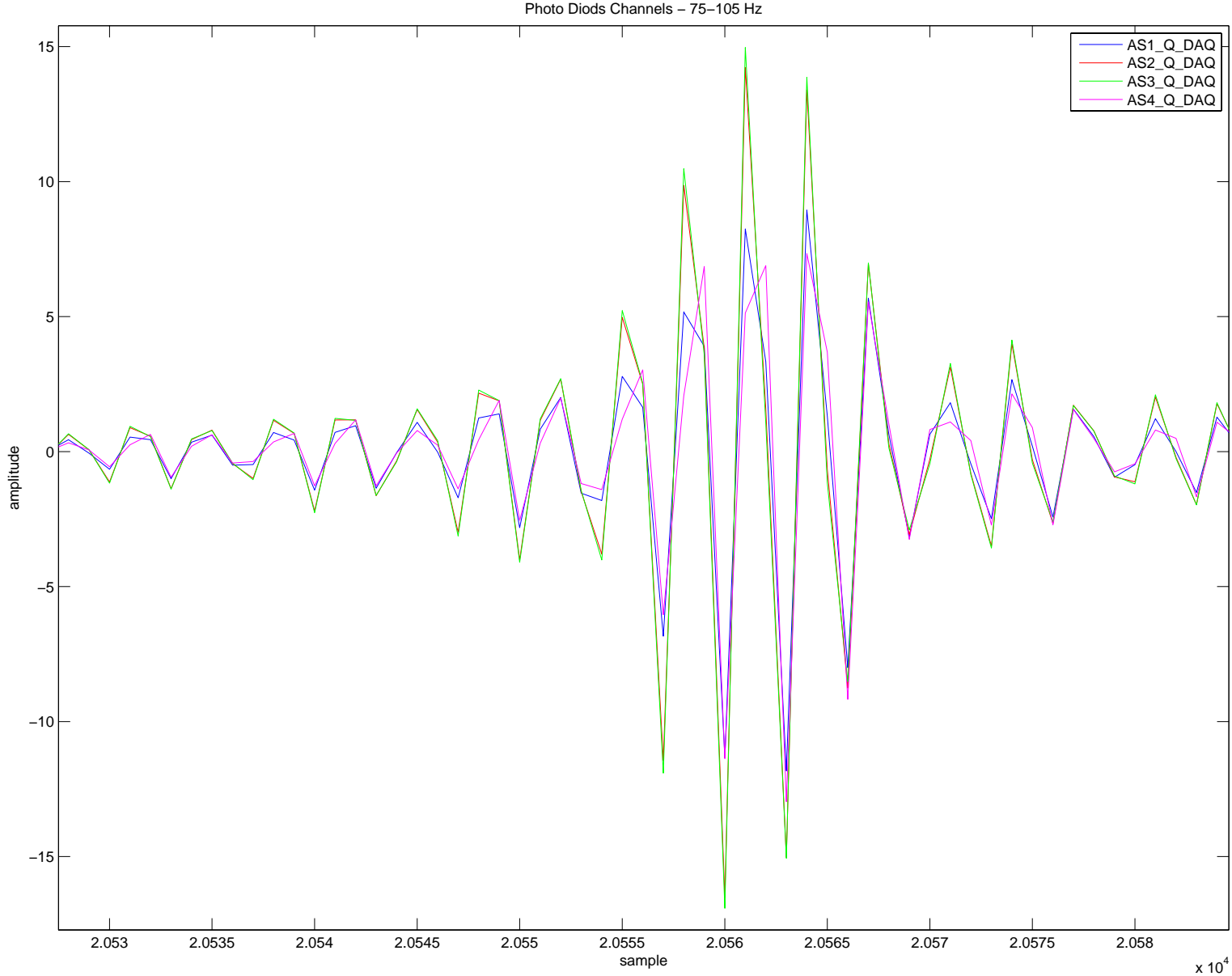
# Glitch at 865163824, freq. band 20-50 Hz – zoom-in



# Glitch at 865163824, freq. band 75-105 Hz



# Glitch at 865163824, freq. band 75-105 Hz, zoom-in



- Summary:
  - dmt online monitor: PhotodiodesMon
  - Standalone tool for post-processing
  - Matlab-scripts for visualization
- Future work
  - Complete the monitor by reporting glitches which are in the signal
  - difference signal = 0  $\Rightarrow$  there is a signal in the light
  - perfect signal coincidence  $\nRightarrow$  strong signal

Monitors Graphics



Traces Range Units Cursor Config  
Style X-axis Y-axis Legend Param

Show

Placement

Top left  Top right  
 Bottom left  Bottom right

X: 0.00 Y: 0.00 Size: 1.0

Symbol style

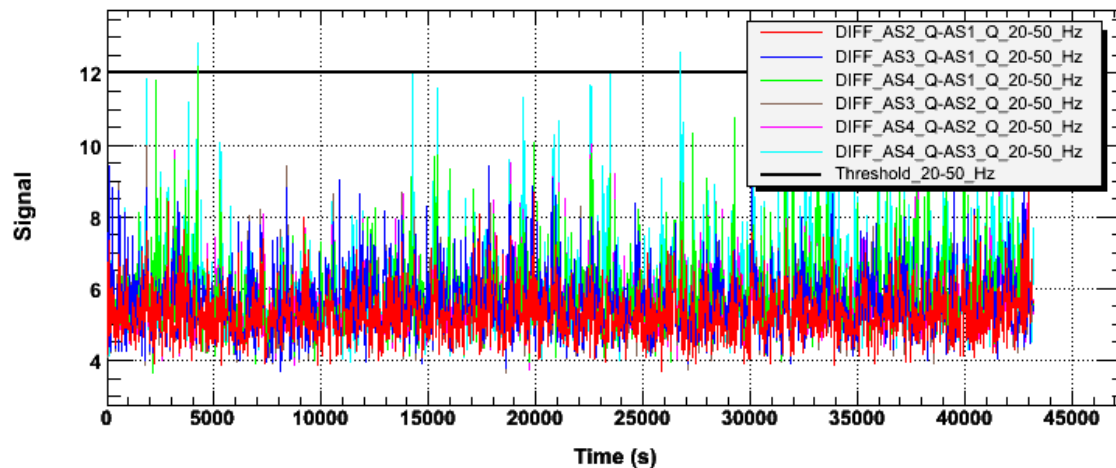
Same as trace  None

Text

Auto  User:

0 1 2 3 4 5 6 7

Time series



T0=20/07/2007 04:02:34

Avg=1



Style X-axis Y-axis Legend Param  
Traces Range Units Cursor Config

Graph: Time series

0 1 2 3 4 5 6 7

Active

Channels

A: Threshold\_75-105\_Hz

B:

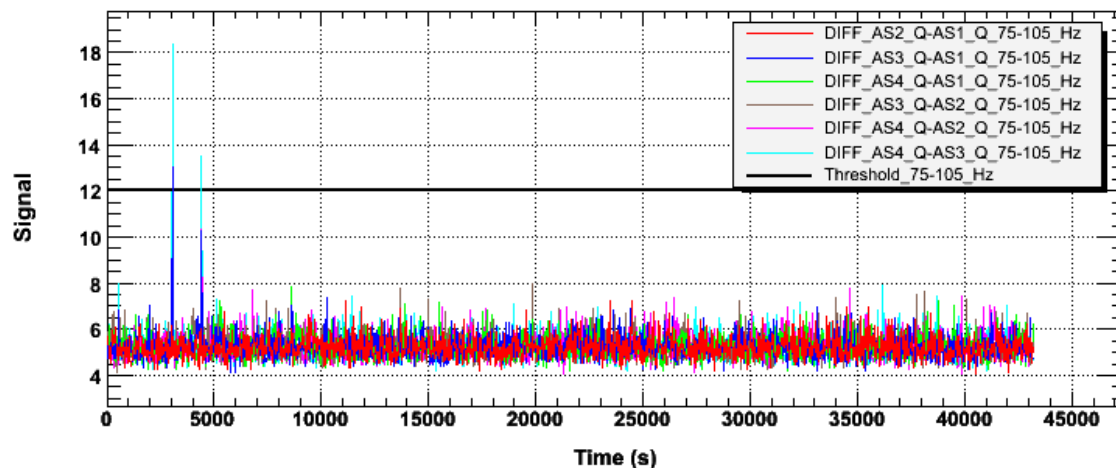
Style

Line  Symbol  Bar

solid cross solid

2.0 1.0 0.10

Time series



T0=20/07/2007 04:02:34

Avg=1

Reset

Zoom

Active

New

Options...

Import...

Export...

Reference...

Calibration...

Math...

Print...

Update

Run

Stop

Exit