

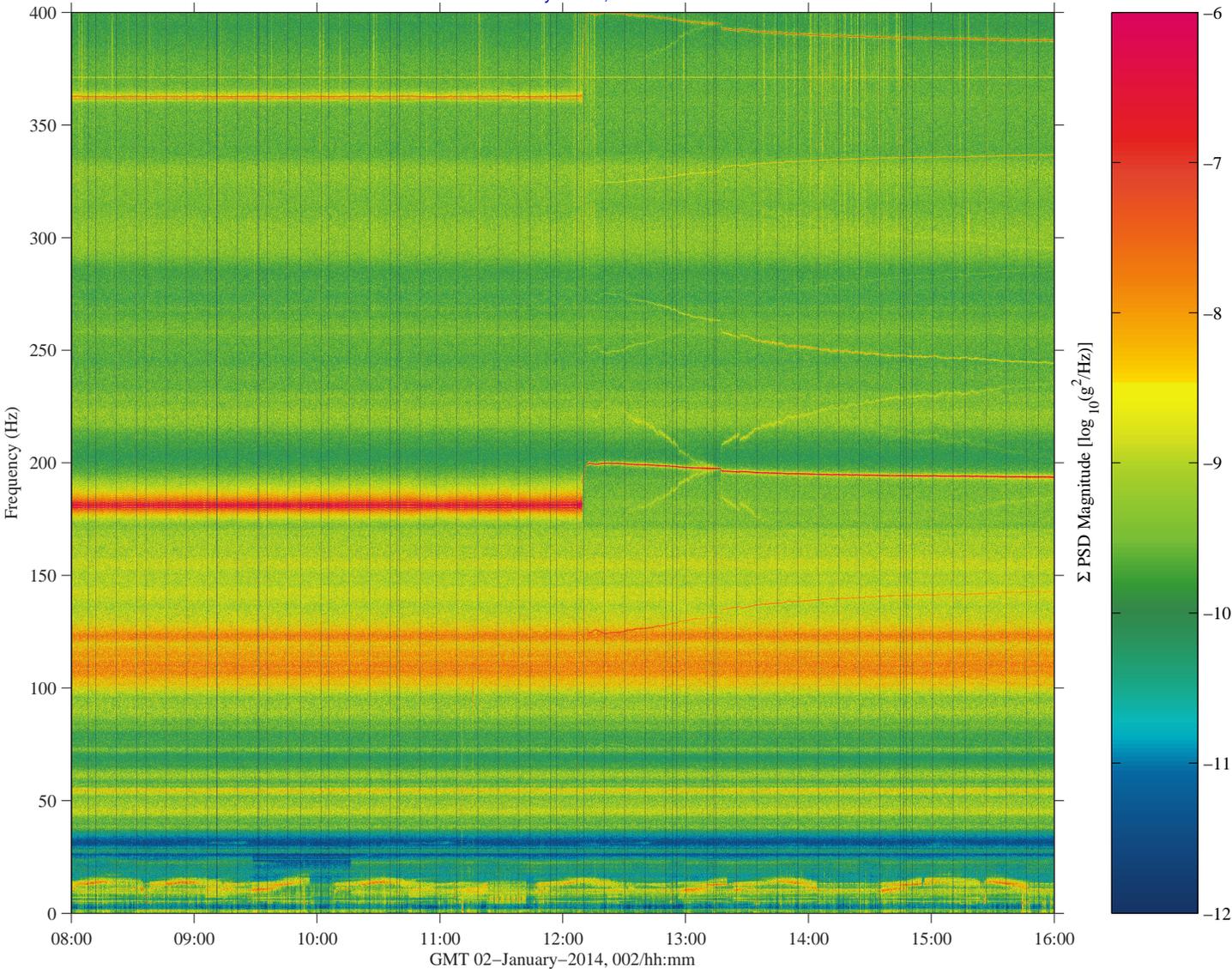
# Columbus 181.5 Hz Sudden Change Quality

sams2, 121f08 at COL1A1, ER3, Seat Track near D1:[371.17 193.43 165.75]  
 1000.0000 sa/sec (400.00 Hz)  
 $\Delta f = 0.122$  Hz, Nfft = 8192  
 Temp. Res. = 8.192 sec, No = 0

sams2, 121f08

Start GMT 02-January-2014, 002/08:00:00.001

Sum  
 Hanning, k = 3515  
 Span = 8.00 hours



from: /misc/yoda/pub/pad\_pims\_04-Jan-2014.07:39:23.261

Description	
Sensor	SAMS 121f08 1000.0 sa/sec, 400.0 Hz
Location	COL1A1, ER3, Seat Track D1
Plot Type	Spectrogram

- Notes:**
- This 8-hour spectrogram starting at GMT 02-Jan-2014, 08:00 shows a sudden transition at about 12:09:30.
  - Before the transition, note the strong, somewhat diffuse spectral trace centered at about 181.5 Hz and its 2nd harmonic at double that frequency.
  - After the transition, this disturbance appears to suddenly change to a narrowband disturbance that settles out at about 200 Hz, also with its 2nd harmonic (which is hard to discern along the top edge of the spectrogram).

Regime:	Vibratory
Category:	Equipment
Source:	Columbus 181.5 Hz Sudden Change

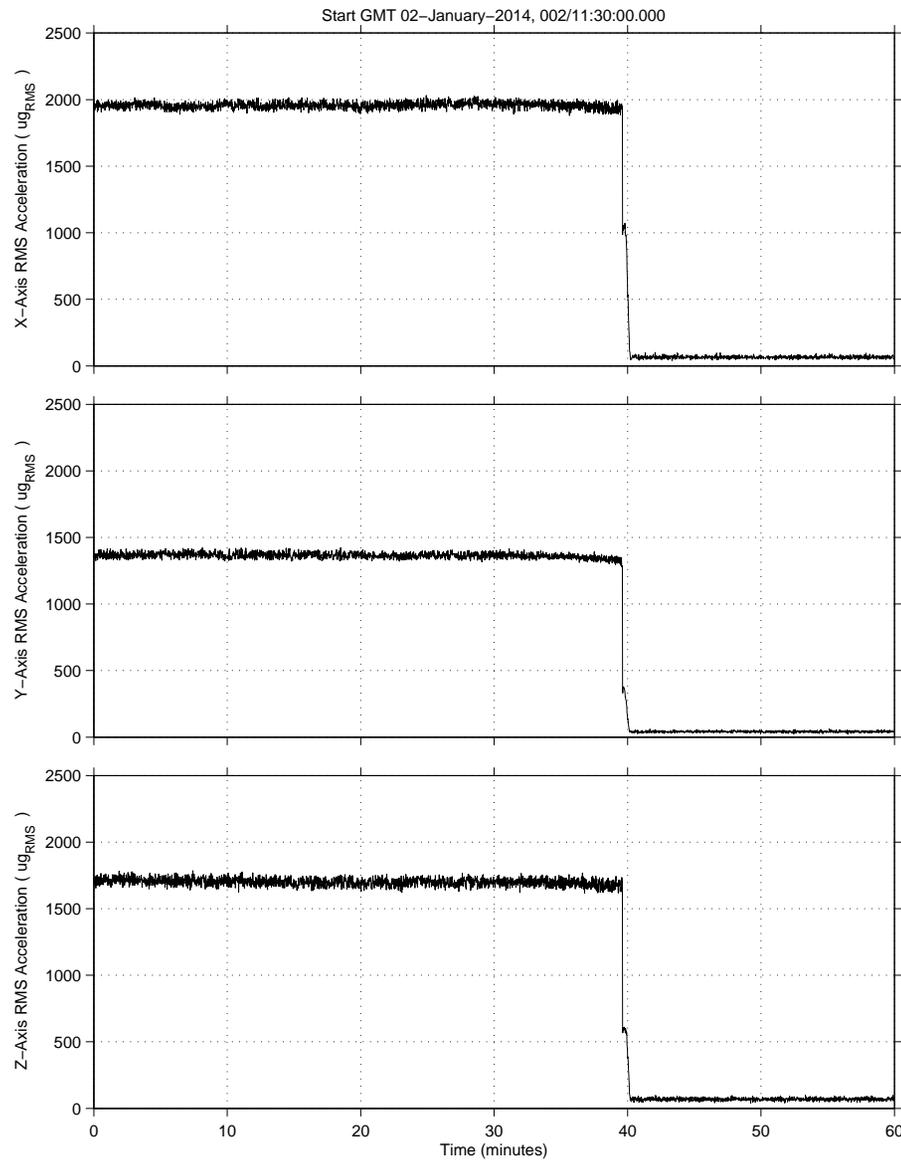


# Columbus 181.5 Hz Sudden Change Quantify

sams2, 121f08 at COL1A1, ER3, Seat Track near D1:[371.17 193.43 165.75]  
 1000.0000 sa/sec (400.00 Hz)  
 Δf: 0.977 Hz, Range: 170.5 - 192.5 Hz  
 Temp. Resolution: 1.024 sec

SAMS2, 121f08, COL1A1, ER3, Seat Track near D1  
 1-Second Interval RMS for 170.5 < f < 192.5 Hz

SSAnalysis[ 0.0 0.0 0.0]  
 Hanning, k = 3



Description	
Sensor	SAMS 121f08 1000.0 sa/sec, 400.0 Hz
Location	COL1A1, ER3, Seat Track D1
Plot Type	Interval RMS

## Notes:

- This 3-panel plot shows the X-, Y-, and Z-axis (SSA) components of the strong disturbance centered at 181.5 Hz.
- Note at the time of sudden change, that all 3 axes show a large drop in RMS value, which was calculated for the frequency range from 170.5 to 192.5 Hz. See the last page for more precise quantification.

Regime:	Vibratory
Category:	Equipment
Source:	Columbus 181.5 Hz Sudden Change

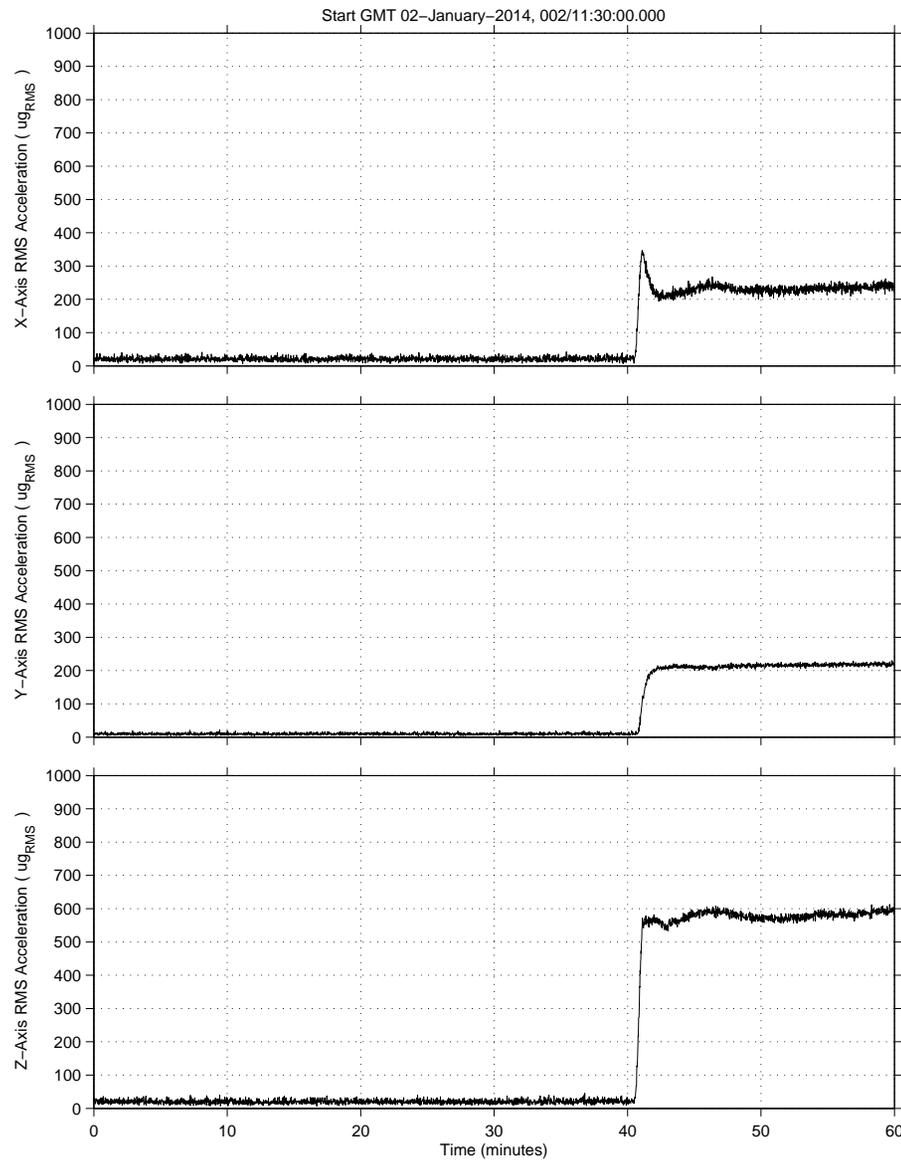


# Columbus 181.5 Hz Sudden Change Quantify

sams2, 121f08 at COL1A1, ER3, Seat Track near D1:[371.17 193.43 165.75]  
 1000.0000 sa/sec (400.00 Hz)  
 Δf: 0.977 Hz, Range: 197 – 203 Hz  
 Temp. Resolution: 1.024 sec

SAMS2, 121f08, COL1A1, ER3, Seat Track near D1  
 1-Second Interval RMS for 197 < f < 203 Hz

SSAnalysis[ 0.0 0.0 0.0]  
 Hanning, k = 3



## Description

Sensor	SAMS 121f08 1000.0 sa/sec, 400.0 Hz
Location	COL1A1, ER3, Seat Track D1
Plot Type	Interval RMS

## Notes:

- This 3-panel plot again shows the X-, Y-, and Z-axis (SSA) components of the 200 Hz disturbance after the transition from 181.5 Hz.
- Note at the time of sudden change, that all 3 axes show a large increase in RMS value, which was calculated for the frequency range from 197 to 203 Hz. See the last page for more precise quantification.
- The X-axis overshoot in RMS value may help further characterize the equipment that makes this transition and help identify it in the future.
- Finally, note that before transition, this disturbance was strongest on the X-axis, but after the transition, it became quieter, more narrow-band, and more aligned with the Z-axis.

Regime:	Vibratory
Category:	Equipment
Source:	Columbus 181.5 Hz Sudden Change



## Columbus 181.5 Hz Sudden Change Ancillary Notes

On GMT 02-Jan-2014, the SAMS sensor (121f08) located at COL1A1, ER3, on a Seat Track Device near D1 in the Columbus Laboratory, detected a sudden, spectral transition. At about GMT 02-Jan-2014 12:09:38, a notably strong disturbance at 181.5 Hz with a distinct 2nd harmonic suddenly changed to a much more tightly-controlled 200.0 Hz narrowband disturbance whose signature also showed a distinct 2nd harmonic. The PIMS team at NASA GRC contacted a representative from ESA with regards to this sudden change, but they had no planned scientific experiment equipment activities all day, and the only commanding they performed was to SOLAR, their external payload. Their systems representative also reported no expected changes either.

Freq. Range (Hz)	Axis	RMS ( $\mu\text{g}$ )	
		Before Transition	After Transition
170.5 < f < 192.5	X	1968.6	65.8
170.5 < f < 192.5	Y	1361.3	35.4
170.5 < f < 192.5	Z	1705.5	65.8
197 < f < 203	X	18.2	232.8
197 < f < 203	Y	10.1	216.6
197 < f < 203	Z	18.2	589.1

