**BioLab Centrifuge Rotor Test**

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<th>Description</th>
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<tr>
<td>Sensor</td>
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<tr>
<td>Location</td>
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<td>Plot Type</td>
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**Notes:**
- This color spectrogram shows the 12 two-minute interval tests of a BioLab centrifuge rotor in the Columbus module.
- Note the narrowband, horizontal red traces near 107 Hz that start at the GMT hh:mm shown in the colored tick marks along the time axis.
- The alternating two-minute periods that start on the red tick marks are at slightly higher frequency than the magenta ones.
- The rotational rate of the rotor was to be about 60 RPM with drive motor at 600 RPM, but we see vibratory harmonics at much higher frequencies in these SAMS sensor measurements in the EPM rack adjacent to the BioLab rack.
Description

Sensor: SAMS 12108
Location: COL1A3, EPM, near PK-4
Plot Type: Power Spectral Density
Notes:
- This power spectral density plot is the averaged spectra used in the previous color spectrogram.
- Note primarily the spectral peaks near 107.3 Hz and 86.5 Hz.
- The peak at about 107.3 Hz shows that this rotor-induced vibration dominated the acceleration spectra at the SAMS measurement location in the EPM rack during this short span.

Regime: Vibratory
Category: Equipment
Source: BioLab Centrifuge Rotor
BioLab Centrifuge Rotor Test

**Description**

- **Sensor**: SAMS 121f08
- **Location**: COL1A3, EPM, near PK-4
- **Plot Type**: Power Spectral Density

**Notes:**

- These power spectral density plots show the averaged spectra used in the previous color spectrogram, this time on a per-axis basis for the 3 orthogonal measurement axes.
- Note that the vertical axis on these plots is logarithmic and that the spectral peak near 107.3 Hz was aligned primarily with the XY-plane.

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**Regime**: Vibratory

**Category**: Equipment

**Source**: BioLab Centrifuge Rotor
BioLab Centrifuge Rotor Test

Description
- Sensor: SAMS 121f08
- Location: COL1A3, EPM, near PK-4
- Plot Type: RMS Accel. vs. Time

Notes:
- This plot shows the RMS acceleration value versus time over the same 2-hour span as the previous color spectrogram.
- We again see clear indication of the 12 two-minute rotor-spinning periods.
- Note that the RMS acceleration was slightly higher during the intervals when the rotor was spinning at the slightly higher-frequency, and these intervals were alternating.

Regime: Vibratory
Category: Equipment
Source: BioLab Centrifuge Rotor

PIMS ISS Acceleration Handbook
Date last modified 2015-08-10

Glenn Research Center
BioLab Centrifuge Rotor Test

Description

<table>
<thead>
<tr>
<th>Sensor</th>
<th>SAMS 121f08 500.0 sa/sec, 200 Hz</th>
</tr>
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<tbody>
<tr>
<td>Location</td>
<td>COL1A3, EPM, near PK-4</td>
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<tr>
<td>Plot Type</td>
<td>Spectrogram (zoom-in)</td>
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</table>

Notes:

- This spectrogram zooms in on the frequency range between 104 and 120 Hz to show the frequency variations for this centrifuge.
- We again see clear indication of the 12 two-minute rotor-spinning periods.
- Note that the alternating high/low frequency values for every other period when the the rotor was spinning are evident here.