Array 48: Microphone Phased Array System

Application: Engineering and scientific research

Features:
- 48 microphones (Earthworks M30)
- 1 m array diameter
- Precision machined aluminum tooling plate
- Built-in optical camera
  - Beamforming images labeled by SPL and superimposed on optical image
- Imaging over 100 Hz – 44 kHz (microphone specification covers 5 Hz – 30 kHz)
- Several frequency ranges:
  - Narrowband
  - 1/3 and 1/12 octave band, kHz bands
  - OASPL over a specified range
- Maximum SPL: 142 dB at microphones, 136 dB free field
- Unsteady analysis
  - Isolate transient sounds; create acoustic videos
- Very fast beamforming (about 1 second per image in many cases)
- Advanced options built in
  - Enhance resolution mode
    - Better than the classical limit
  - TIDY deconvolution
    - Quantitative integrated spectra over selected Regions of Interest
    - Lower sidelobe levels (12 dB typical)
    - Wide band (up to OASPL)
    - Improved resolution
      - Dramatically improved for wide band sources
    - Designed for coherent source distributions
  - DAMAS2 deconvolution
  - CLEAN-SC deconvolution
  - MUSIC super resolution algorithm
  - Othogonal Beamfoming
  - Wind turbine mode
  - Generalized Inverse beamforming
    - Applies to coherent and incoherent source distributions
    - Generalization of Nearfield Acoustic Holography
    - Produces synthetic directivity patterns
  - Sweep modes
    - Depth, Time, Frequency
- Additional options
  - Focused copy
  - Dedopplerization for moving sources
- Standard audio data files compatible with external analysis packages such as Matlab
- Turn-key system including
  - 4’ × 4’ × 6” array structure with stand
  - 6 8-channel preamplifiers (Digidesign PRE)
  - 2 24-channel A/D converters (24 bit, 96 kHz)
  - Cables and connectors
  - 2 equipment racks
  - Desktop computer (Apple Mac Pro)
  - One-year warranty, e-mail support, and software updates

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