

The SFU logo consists of the letters 'SFU' in white, bold, sans-serif font, set against a solid red rectangular background.

SFU

SIMON FRASER UNIVERSITY
THINKING OF THE WORLD

The background image shows a modern architectural structure with a prominent, cantilevered roof. The roof is supported by a complex network of metal beams and columns. The building's facade is dark and textured. In the foreground, there are some red flowers. The sky is a clear, bright blue.

Sound Equipment Workshop

Operation & Maintenance

June 2010 □

- Agenda
 - Equipment List
 - Microphone Categories and Polar Patterns
 - Microphone Models
 - Recording Sound
 - Zoom H2
 - Zoom H4N
 - Sound Effects Library
 - Questions and Pack-up

Sound Equipment Workshop

- Audio Recording and Sound Effects Tools
 - Available from the SFU Surrey Library:
 - Zoom H2, Zoom H4N
 - 35 microphones including uni- and omni-directional, shotgun, clip-on
 - Book equipment up to 2 weeks in advance
 - Sound effects CD collection (a catalog is searchable/viewable online) – 2 hour loan
 - Most of Sound effects CD collection also accessible from the desk top of all SFU Surrey student computers for download

Sound Equipment Workshop

- **Microphone Categories**
 - **Stand microphone**, for use either on a table or a floor stand. The microphone is usually wired to an amplifier or recording device.
 - **Handheld microphone**, which can be wired or wireless. Handheld mics are often omnidirectional.
 - **Lapel microphone** (also called a lavalier), either wired or wireless. **Boom microphone**, usually attached to a long pole, held overhead.

Sound Equipment Workshop

- Common Microphones Polar Patterns
 - What are they good for?
 - Omni-directional:
 - provides maximum ambient pickup
 - Low sensitivity to pops and clicks.
 - Can be hand-held, or used in a stand.
 - **Function:** Good for broad, or moving sound sources, and a variety of musical applications such as voice and acoustic instruments.

Sound Equipment Workshop

- Common Microphones Polar Patterns
 - Bi-directional:
 - patterns are pointed outward at angles of approximately +/- 45-60 degrees from the front of the microphone
 - Normally used on stands.
 - **Function:** Ideal for bi-directional sounds, 2-sided interviews.

Sound Equipment Workshop

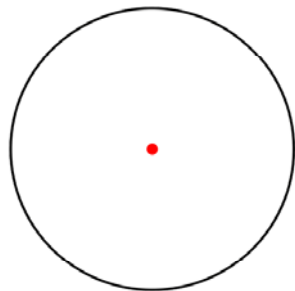
- Common Microphones Polar Patterns
 - Unidirectional – Cardioid, Supercardioid, Hypercardioid, Shotgun:
 - Directional microphones that have a heart-shaped pattern and is less sensitive to sound arriving from sources at angles 90 degrees or greater away from its front.
 - Provides max. pick-up of a source coming from a single direction
 - Good rejection of room acoustics and background noise.
 - Better gain-before-feedback than omni mics in sound reinforcement uses.

Sound Equipment Workshop

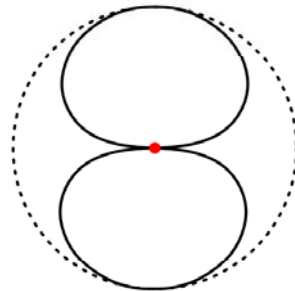
- Common Microphones Polar Patterns
 - Unidirectional – Cardioid, Supercardioid, Hypercardioid, Shotgun (cont'd):
 - Cardioid microphones can be hand-held or attached to stands. The more directional microphones often need hand-held control, to keep them on target to the sound source.
 - **Function:** Excellent for capturing *warm* directional sound such as the voice of an interview subject or as an overhead mic. The shotgun has the most side rejection and longest reach. It is often used in the film industry to isolate sound sources at a distance.

Sound Equipment Workshop

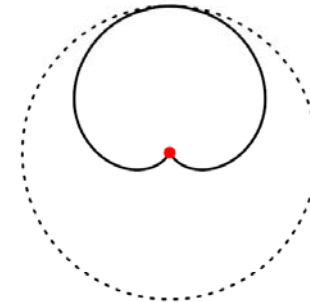
- Polar Pattern Diagrams



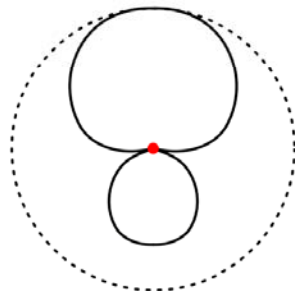
Omnidirectional



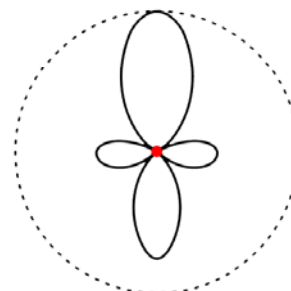
Bidirectional



Cardioid



Hypercardioid



Shotgun

Sound Equipment Workshop

- Omni-directional Mic
 - Audio-Technica ATM10a
 - Frequency Response: 20 - 18,000 Hz
 - Sensitivity: phantom -44 dB, battery -45 dB



- Ideal for group vocals, strings, cymbal overheads, acoustic guitar and piano
- Omni pattern provides maximum ambient pickup
- Extremely smooth, extended response on- and off-axis
- Low sensitivity to popping and overload
- Operates on battery or phantom power

Sound Equipment Workshop

- X/Y Stereo Mic
 - **Audio-Technica AT822**
 - Frequency Response: 30 - 20,000 Hz
 - Sensitivity: -45 dB



- Ideal for DAT recording as well as television, FM and field applications
- Compact, lightweight design is perfect for camera-mount use
- Closely-matched elements provide the spatial impact and realism of a live sound field
- Battery operation only

Sound Equipment Workshop

- Cardioid Mic
 - **Audio-Technica ATM31a**
 - Frequency Response 30 - 20,000 Hz
 - Sensitivity: phantom -44 dB, battery -45 dB

Sound Equipment Workshop

- **Audio-Technica ATM31a (cont'd)**



- Ideal for close-up vocals, overheads, piano and strings
- Sound is similar to far more expensive studio microphones
- Low-mass diaphragm ensures minimum distortion
- Cardioid pattern provides added warmth when used close up
- Operates on battery or phantom power

Sound Equipment Workshop

- Mini Cardioid Mic (Lavalier Mic)
 - **Audio-Technica AT831b**
 - Frequency Response: 40 - 20,000 Hz
 - Sensitivity: phantom -44 dB, battery -45 dB



- Clip-on lavalier mic also ideal for interviews, and also effective in acoustic guitar applications.
- Provides crisp, full-sounding voice and instrument pickup.
- Operates on battery or phantom power.
- 6' (1.8 m) cable permanently attached between microphone and power module.

Sound Equipment Workshop

- Unidirectional (Shot-gun) Mic
 - **Audio-Technica ATR55**
 - Frequency Response: 70 - 18,000 Hz
 - Sensitivity: -56 dB

Sound Equipment Workshop

– Audio-Technica ATR55 (cont'd)



- Designed especially for use with video cameras
- Two range settings: "Normal" for close- to medium-distance recording; "Tele" for long-distance pickup
- Permanently-attached 3' (0.9 m) cable terminated with a 3.5 mm mini-plug

NOTE: This is a mono microphone that needs to be connected to an MD recorder with a stereo adapter. Otherwise, the MD recorder must be switched to mono-mode.

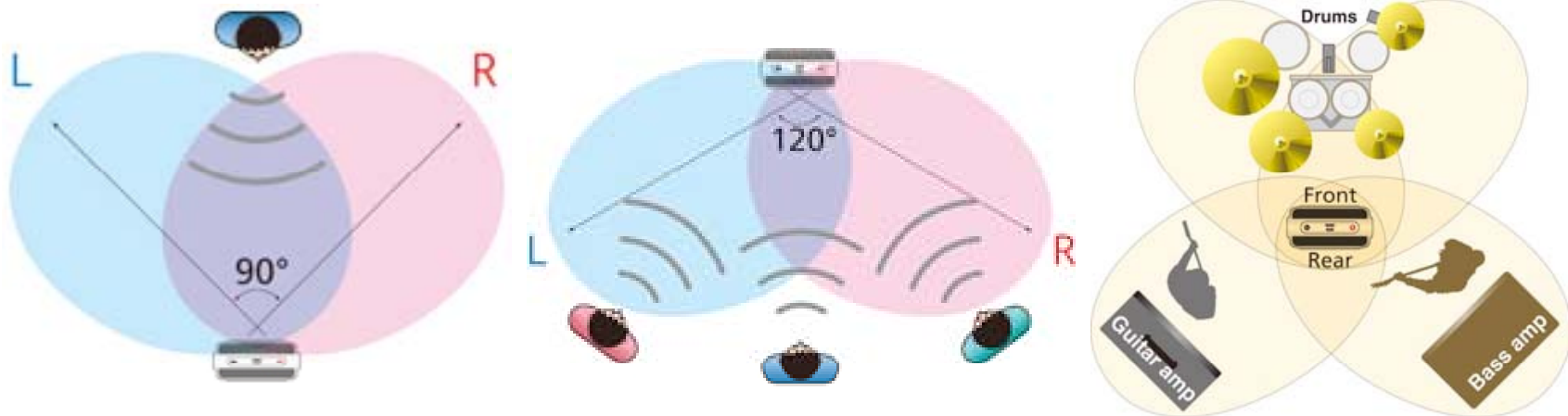
Sound Equipment Workshop

- Zoom H2
 - Solid State Recorder
 - 4 Microphones
 - 3 Recording Configurations
 - Stereo or 5.1 Mixing Applicable
 - USB Data Transfer



Sound Equipment Workshop

- Zoom H2
 - Recording Configurations:
 - Front 90°
 - Front 120°
 - Surround 2 or 4 channels



Sound Equipment Workshop

- Zoom H2
 - Adjusting Recording levels:
 - On the right side of the device switch the MIC GAIN to “L”
 - Hit the record button once to enter the level adjustment display
 - Use the average sound of the room as a gauge



Sound Equipment Workshop

- Use the + - record level buttons to adjust the levels so the average falls between 12 to 6 dB
- If the average can't reach 12 to 6 dB switch the MIC GAIN to "M" then readjust the average using the + - buttons
- If it is still too low use the "H" setting for the MIC GAIN

- Zoom H2
 - Recording:
 - Hit the record button once again to begin recording
 - The recording light will glow solid red
 - Hit the record a third time to stop recording



Sound Equipment Workshop

- Zoom H2
 - Playback and Review:
 - Make sure the PLAY/REC light is off then hit the play button
 - Use the SEEK buttons to navigate through the recordings

Sound Equipment Workshop

- Zoom H2
 - Retrieving the Files:
 - Plug the USB cable into the Zoom H2 and your PC/MAC
 - Click the MENU button and using the LEFT and RIGHT arrow buttons scroll to the sub-menu marked USB
 - Select USB and connect to the computer.
 - The device will now work like a flash drive
 - Delete the files from the device once they are no longer needed.

Sound Equipment Workshop

- Zoom H4N
 - Solid State Recorder
 - X/Y True Stereo Mics
 - 4 Channel Recordings
 - Digital Controlled Preamp
 - USB 2.0 Data Transfer
 - Built In Reference Speaker
 - XLR Inputs With Phantom Power



Sound Equipment Workshop

- Zoom H4N



Sound Equipment Workshop

- Zoom H4N
 - Solid State Recording:
 - Uses compact SD or High-capacity SDHC memory cards up to 32GB
 - Advantages: No mechanical noise, and are not disturbed by vibrations



Sound Equipment Workshop

- Zoom H4N
 - True X/Y Stereo Mic:
 - Onboard stereo condenser mics are arranged with the left and right mics on the same axis.
 - This ensures that the mics are always equal distance from the sound source
 - Advantage: No phase differences between left and right channels. The result is proper phase alignment between channels.
 - Result: Stereo Recording with natural depth and accurate imaging

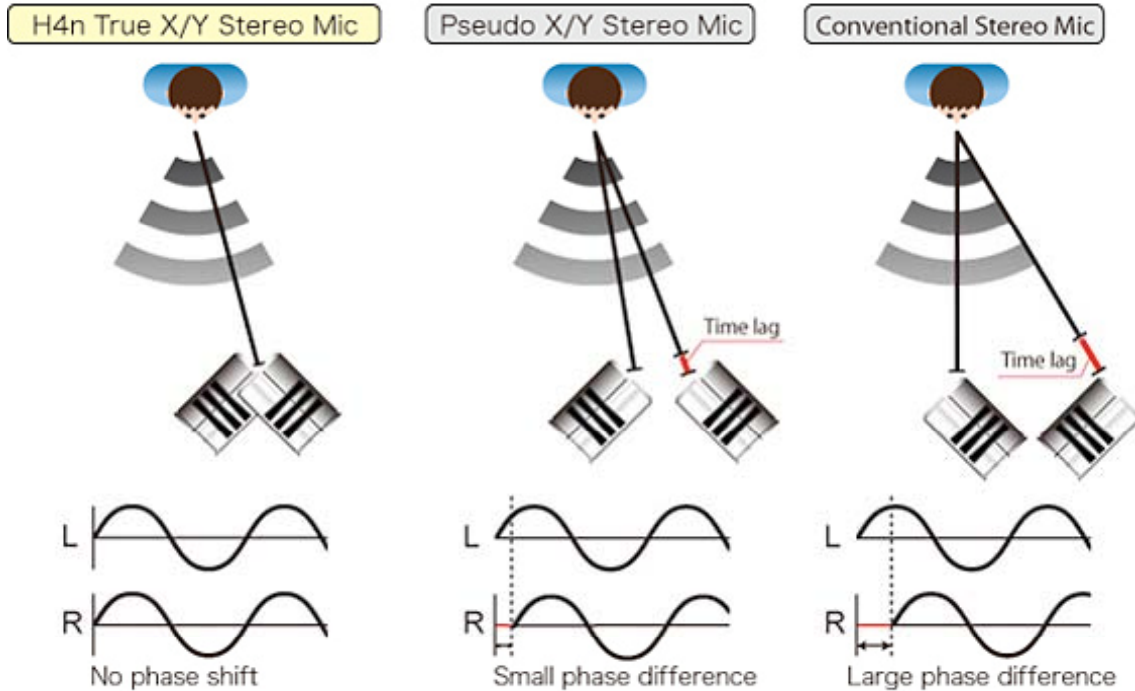
Sound Equipment Workshop

- Zoom H4N
 - 4 Channel Recording:
 - Features a combination of two onboard mics with the option of using your own external mics as well.
 - Use the built-in mixer to blend the channels for balanced recordings with good depth and clarity



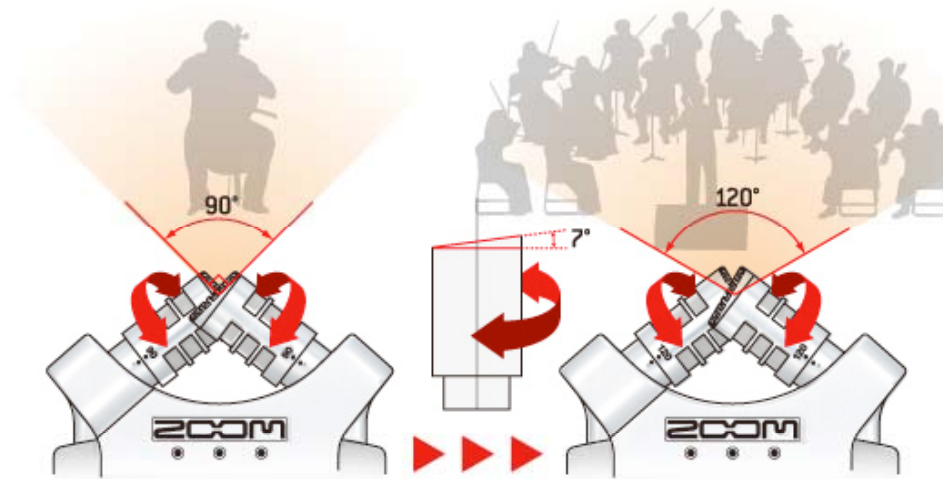
Sound Equipment Workshop

- Zoom H4N
 - True X/Y Stereo Mic:



Sound Equipment Workshop

- Zoom H4N
 - Recording Configurations:
 - Front 90°
 - Front 120°



Sound Equipment Workshop

- Zoom H4N
 - Combined XLR/Phone Connectors:
 - its Hi-Z inputs, you can record guitars or other line output sources such as mixing consoles
 - A separate external mic input supports plug-in power microphones supplying them with phantom power



Sound Equipment Workshop

- Zoom H4N
 - Recording:
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Sound Equipment Workshop

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Sound Equipment Workshop

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Sound Equipment Workshop

- Sound Effects Library
 - database of sound tracks on CDs
 - search by keyword or CD series
 - The SFU Library does not have every CD produced by this company but it has most
 - <http://www.sound-ideas.com:90/sfx/searchsfx2.html>

Sound Equipment Workshop

<http://www.lib.sfu.ca/surrey/equipment>
<http://cgi.sfu.ca/~sfusur/tutorials/lib/>

- Sound Effects Searches

The screenshot shows a web browser window titled "Sound Effect | Sound Effect Libraries - Microsoft Internet Explorer". The address bar shows "http://www.sound-ideas.com/". The page features a navigation menu with links for Home, FAQ, Testimonials, Resource Links, and Site Map. A prominent "Super SEARCH" button is visible. The main content area is titled "Sound Effect Libraries" and contains a search form with the following fields and options:

- CD:
- Description:
- Sort by:
- When Searching: Match All Words between Fields (AND) Match Any Words between Fields (OR)
- Return records per page.

Below the form are "Start Search" and "Clear" buttons. A note states: "NOTE: Wildcards like * or ? are not used by this search engine and will just slow down the search." Below the note, it says: "The best way to search for sound effects in our Sound Effect library is: a) Search for a descriptive word: Enter a descriptive word (like 'jungle') in the 'Description' field of the form on this page and click on the 'Search!' button. This will perform a search in".

Sound Equipment Workshop

<http://www.lib.sfu.ca/surrey/equipment>
<http://cgi.sfu.ca/~sfusur/tutorials/lib/>

- Sound Effects Library
 - Virtual database available on all SFU Surrey computer desktops
 - Simply login and search through the database and copy any desired files to the desktop or USB device.

Sound Equipment Workshop

- Equipment loan policy
 - Full equipment loan policy is available online at www.lib.sfu.ca/surrey/equipment-loan-policy
 - Equipment is loaned to undergraduate and graduate students currently enrolled in an IAT course

Sound Equipment Workshop

- Equipment loan policy
 - Equipment may be borrowed for use in class or in production of assignments required by the curriculum
 - Equipment may not be borrowed for personal use or for projects that are not directly related to IAT assignment

Sound Equipment Workshop

- Equipment reservation
 - Equipment reservation is done at SFU Surrey library checkout counter
 - Reserved equipment must be picked up before 3pm on the day of reservation
 - After 3pm all reservations are cancelled and equipment will be loaned out to students on first come first serve bases

Sound Equipment Workshop

- Late fines and penalties
 - Equipment are due at 12pm. There is no grace period and fine will start at 12:01pm
 - Late fine is \$3 per hour for each equipment
 - Borrower will be financially responsible for damaged, lost, or stolen equipment.

Sound Equipment Workshop

- Returns and renewals
 - Must return equipment to a library staff at SFU Surrey library checkout counter
 - No after hour drop box available for equipment (books only)
 - Do not return equipment to Burnaby campus, or Harbour centre campus.
 - Renewals must be done in person or by phone. No online renewal and do not leave a voice mail.

Sound Equipment Workshop

Questions?
Contact library @
778-782-7411
Lib-surrey@sfu.ca

Sound Equipment Workshop

<http://www.lib.sfu.ca/surrey/equipment>
<http://cgi.sfu.ca/~sfusur/tutorials/lib/>