



# 物質機能科学**IIb**

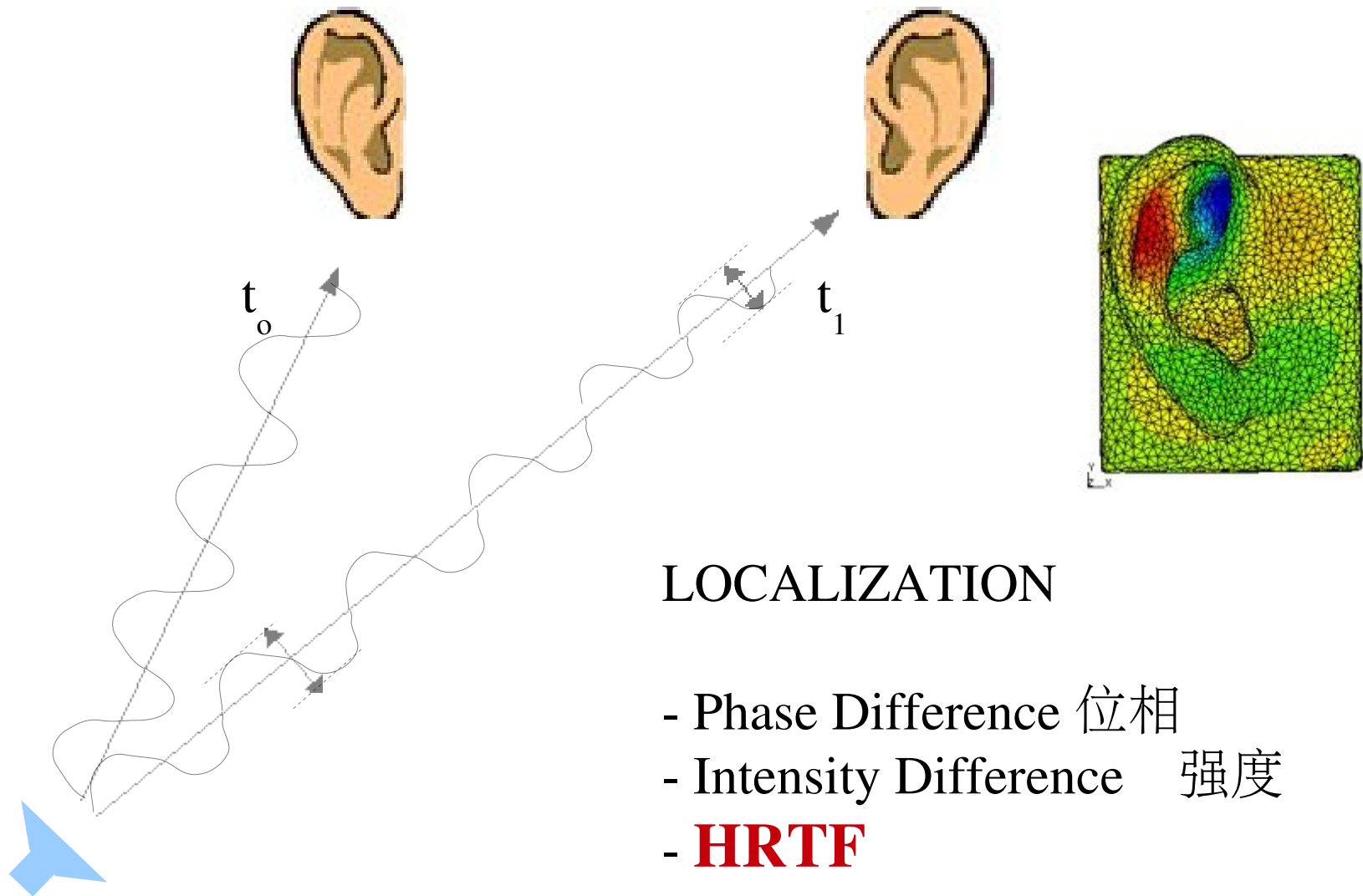
物理博士 ミケレット・ルジェロ

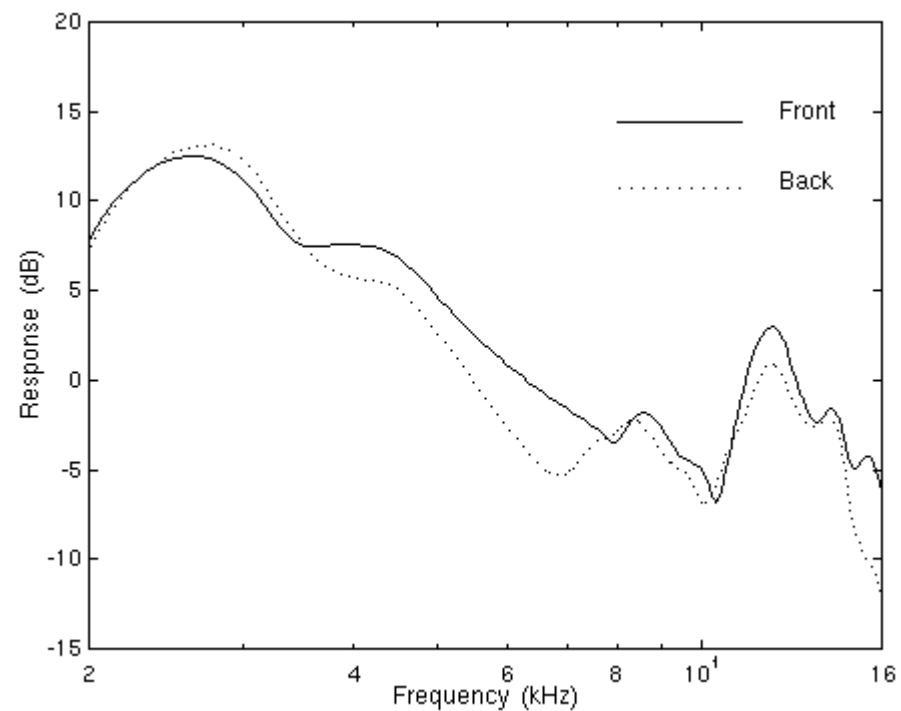
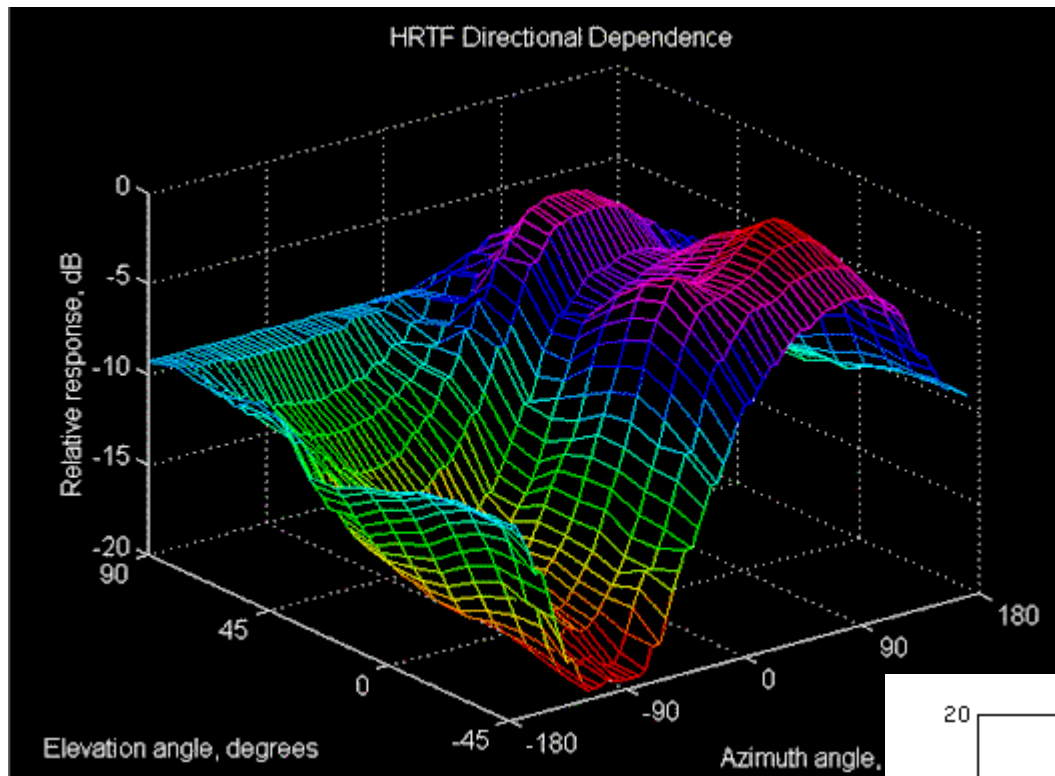
## 知覚情報科学

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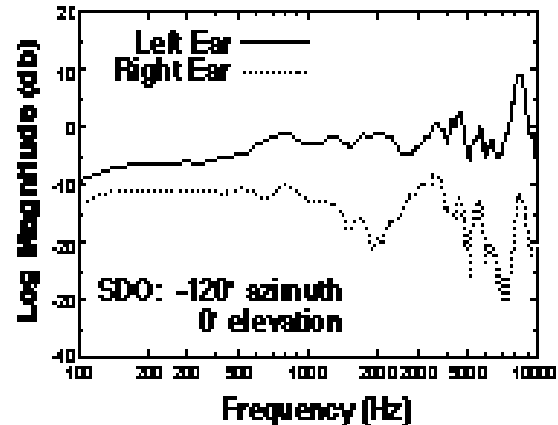
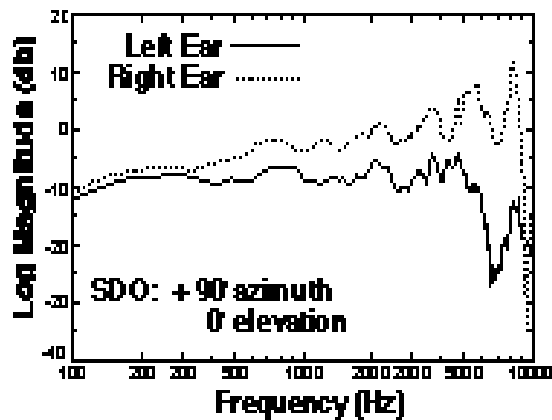
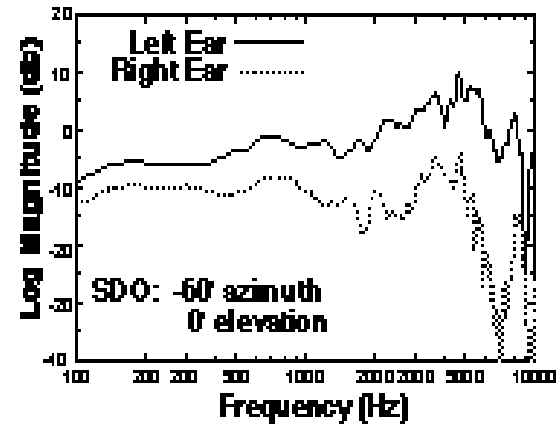
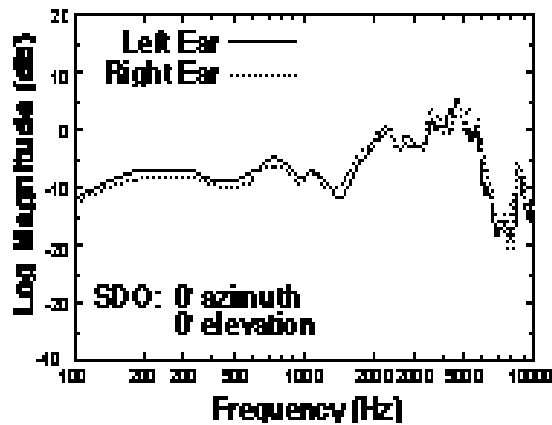
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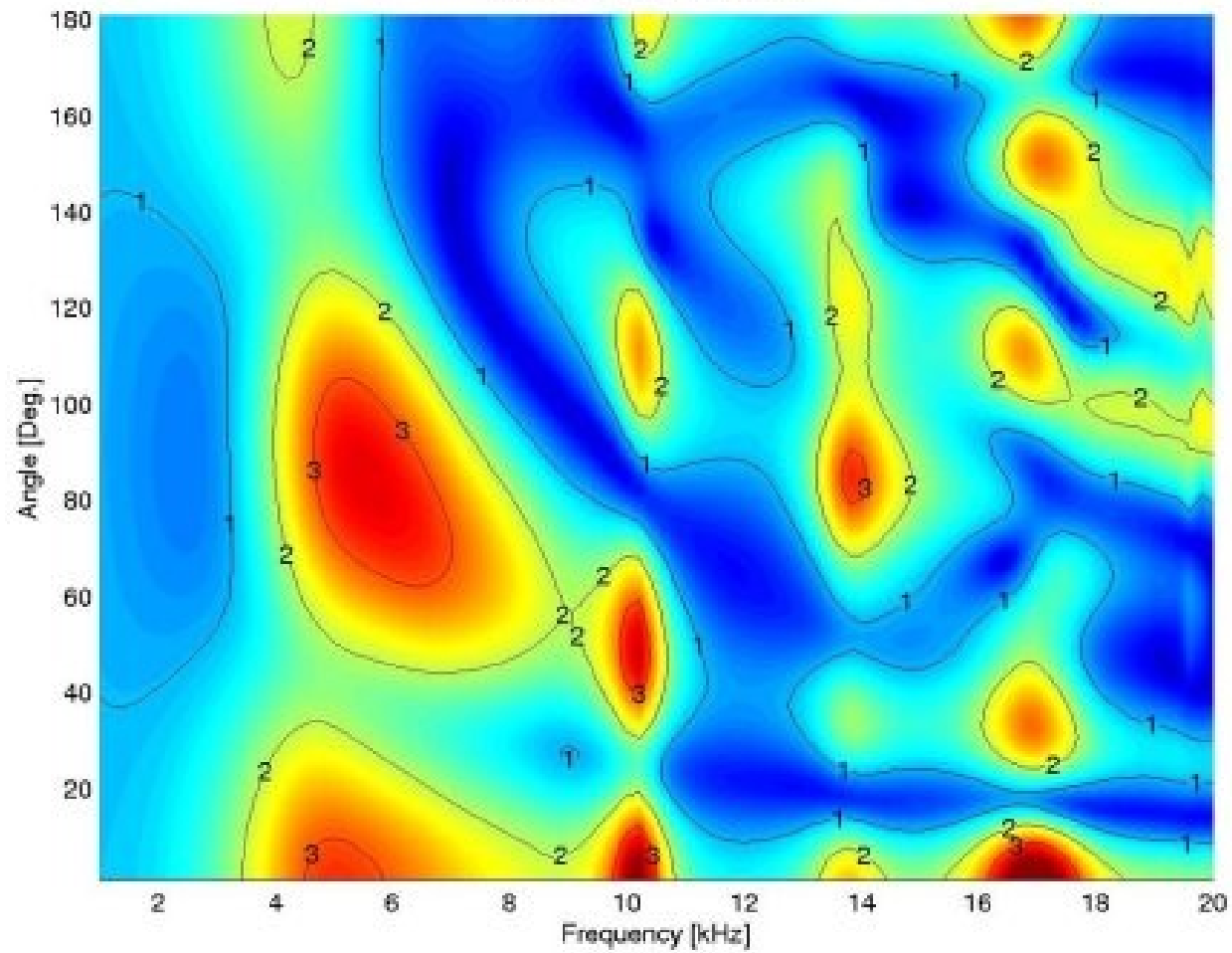




## Head-Related Transfer Functions (HRTFs) Frequency Domain: Magnitude Spectra



DB60 - baffle - simulation



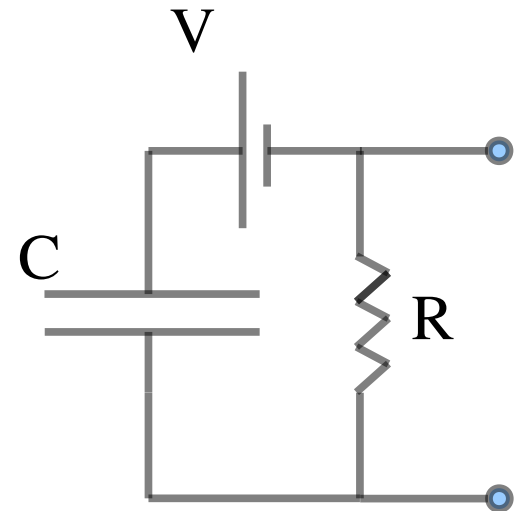
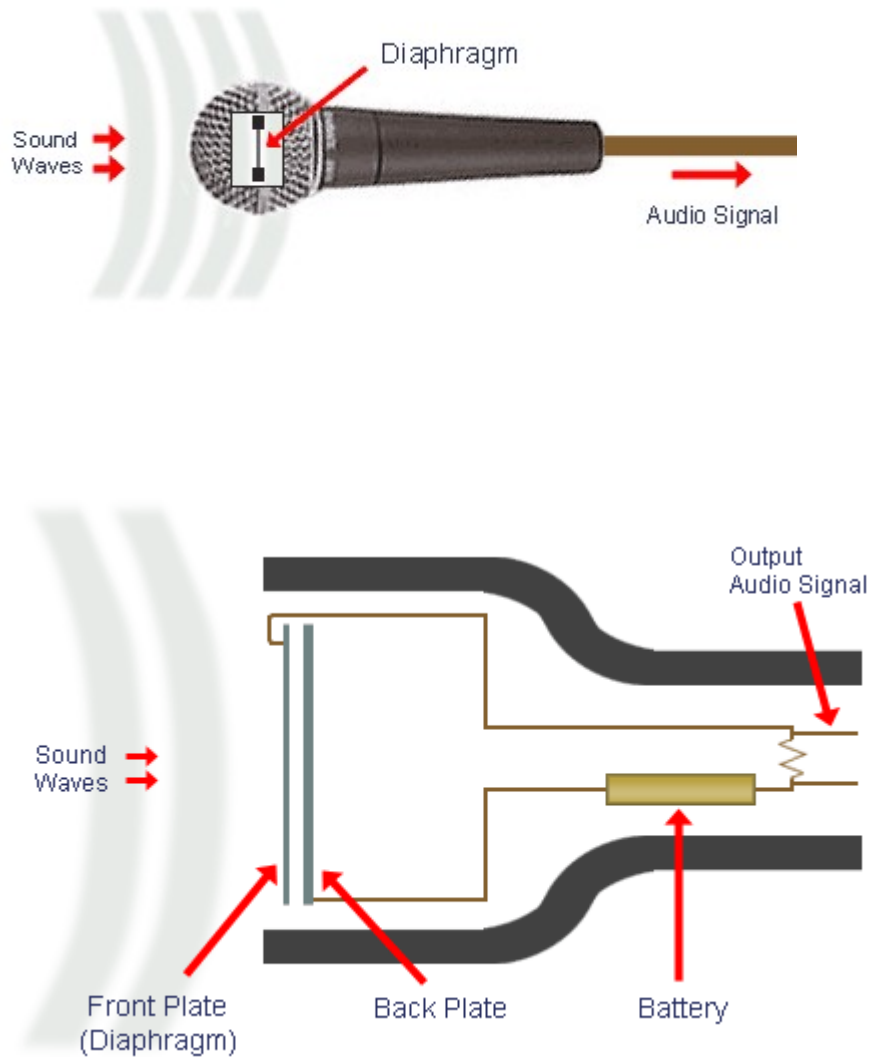
# THE ARTIFICIAL EARS: (マイクロホン)

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Frequency response  
Dynamic Response

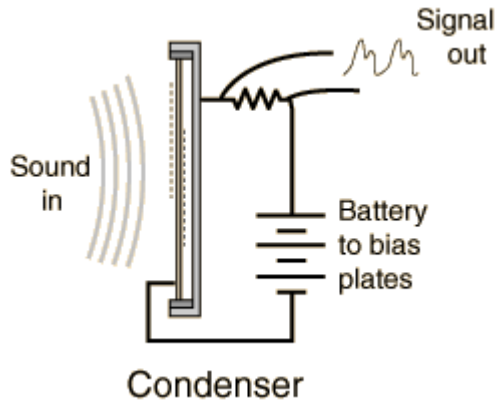
# Condenser microphones



$$C = \epsilon \frac{S}{d}$$
$$V_c = \frac{Q}{C}$$

Condenser microphones have a flatter frequency response than dynamics





$$Q = CV = \frac{\alpha(\text{Area of plate})(\text{voltage})}{(\text{plate spacing})}$$



Advantages:

Best overall frequency response makes this the microphone of choice for many recording applications.

Disadvantages:

Expensive

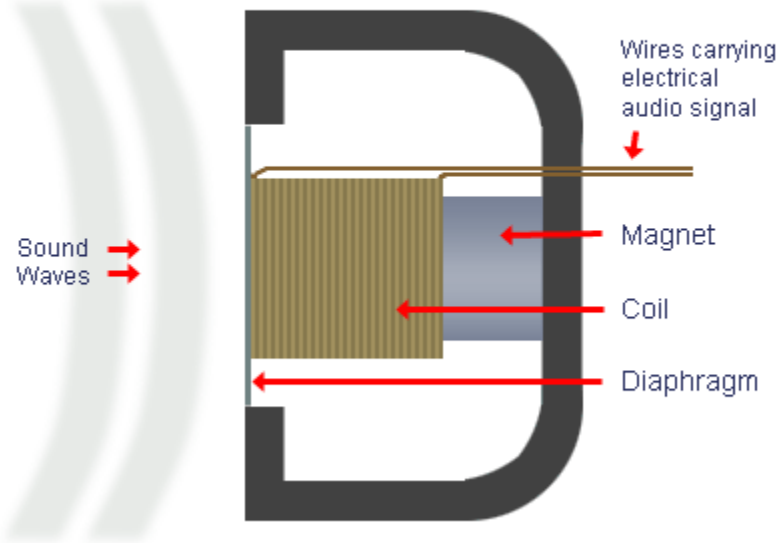
May pop and crack when close miked

Requires a battery or external power supply to bias the plates.

# Dynamic microphones (Electromagnetic Microphones)

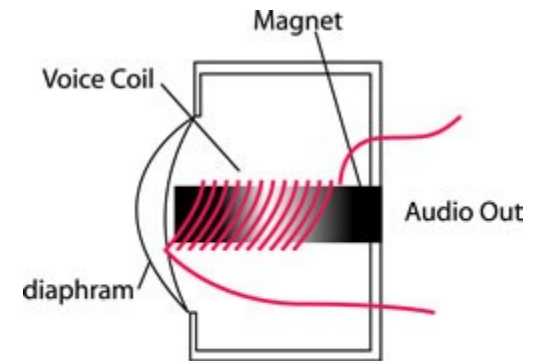
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**Cross-Section of Dynamic Microphone**

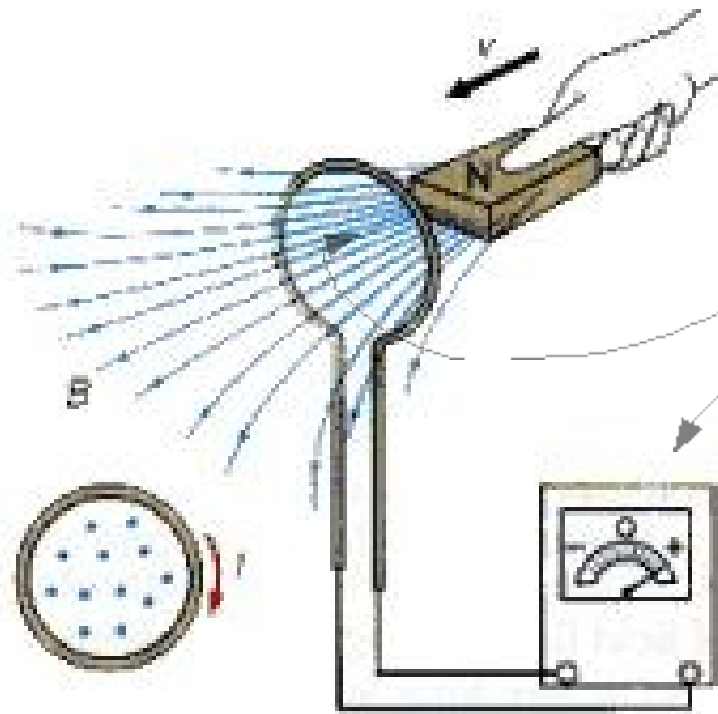


Dynamics do not usually have the same flat frequency response as condensers. Instead they tend to have tailored frequency responses for particular applications.

However they have a good Dynamic response.

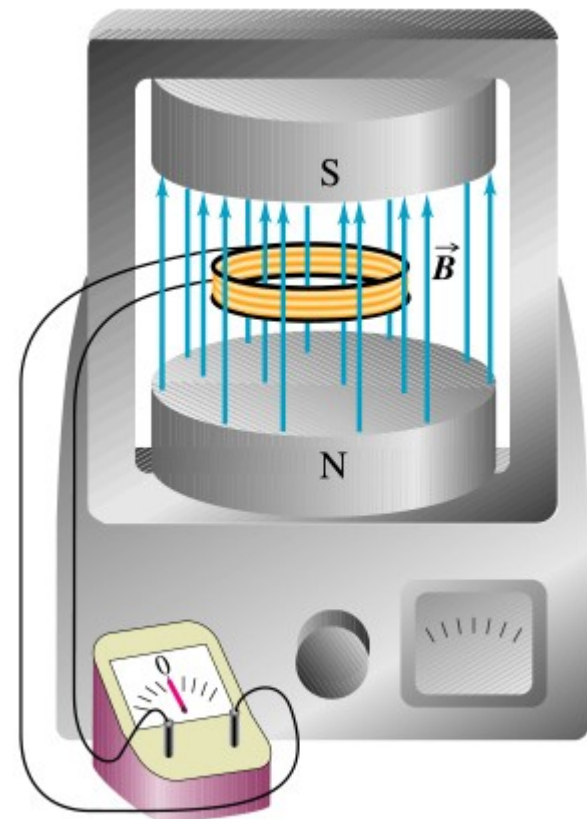


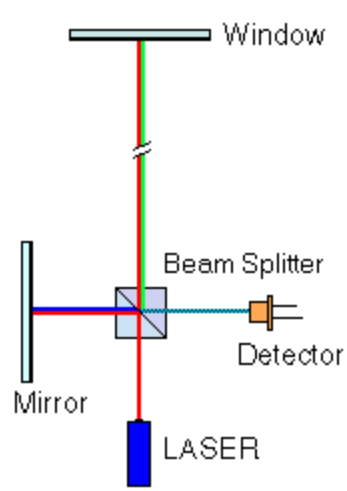
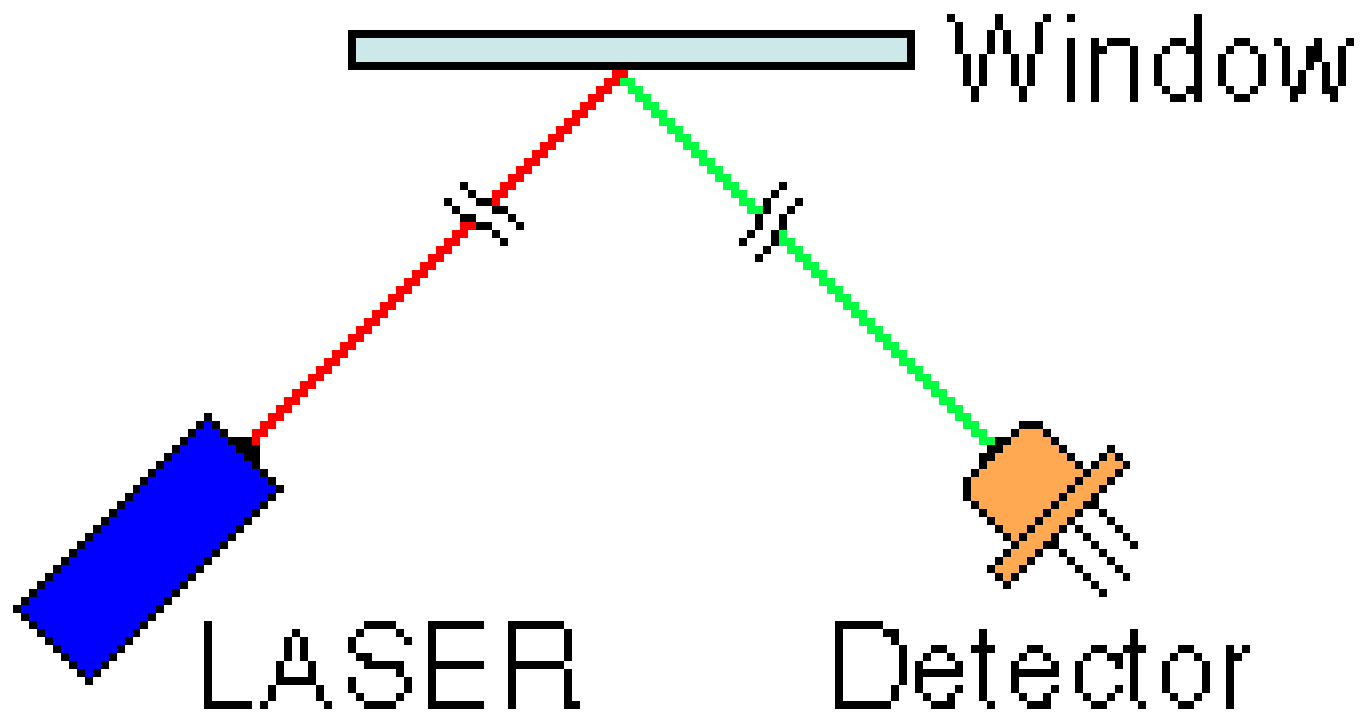
**Dynamic Microphone**

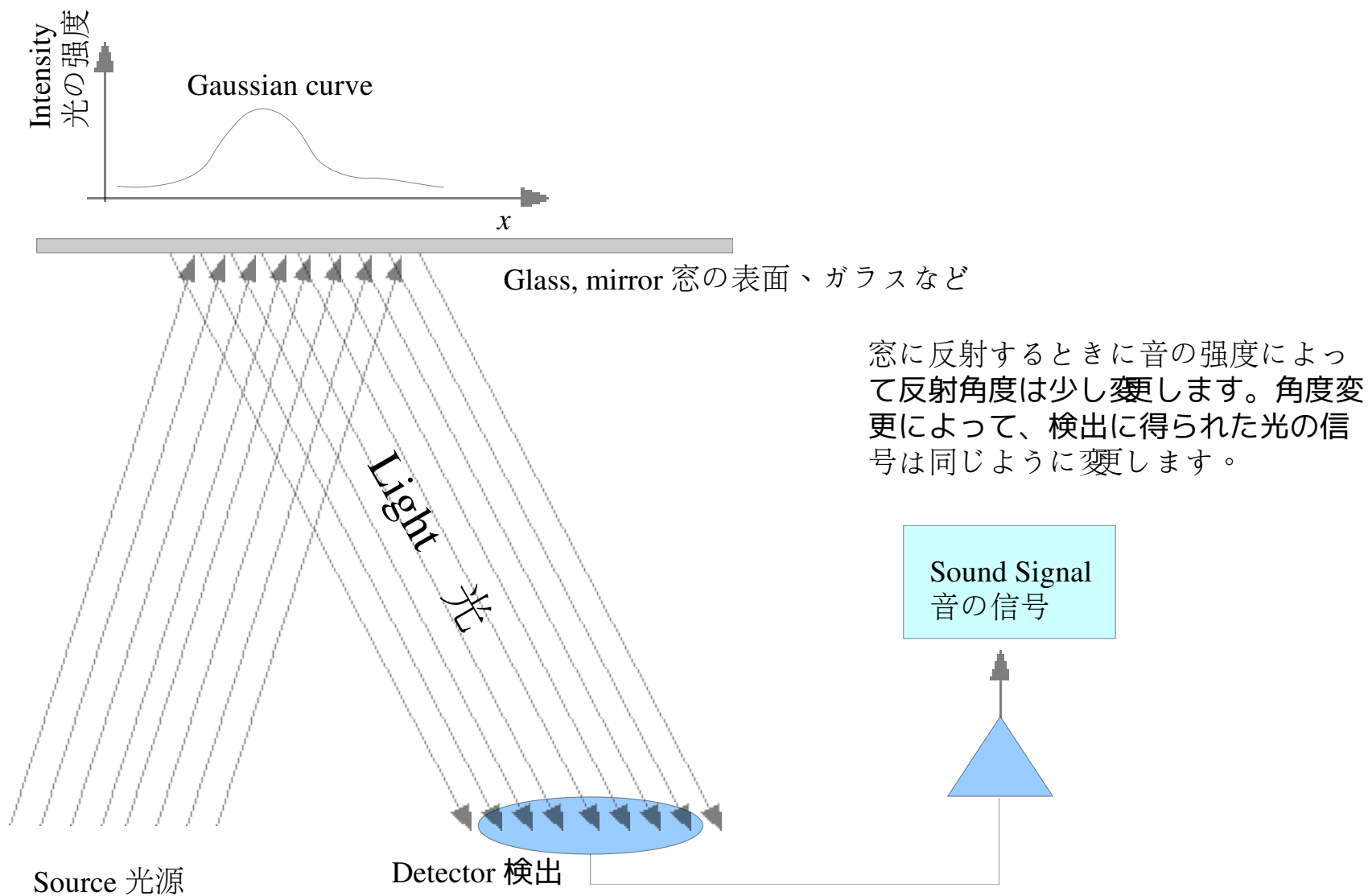


$$\phi = \oint \vec{B} \cdot d\vec{A}$$

$$\mathcal{E} = -\frac{d\phi}{dt}$$







# LASER microphone (Spy Microphone)

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