

(INFORMATICA PER LE) DIGITAL HUMANITIES

INTERCULTURAL STUDIES IN LANGUAGES AND LITTEATURE

UNIVERSITÀ DEGLI STUDI DI BERGAMO
2025 - 2026

MARIO VERDICCHIO

**INFORMATICA PER LE DIGITAL HUMANITIES
ADS SEMINARIO PER STUDENTI
NON ANGLOFONI**

INTERCULTURAL STUDIES IN LANGUAGES AND LITERATURE

**UNIVERSITÀ DEGLI STUDI DI BERGAMO
2025- 2026**

CECILIA SCATTURIN

VENERDÌ 11-14

20 FEBBRAIO - 22 MAGGIO 2026

MATERIALI

[HTTPS://CS.UNIBG.IT/VERDICCH/DH.HTML](https://cs.unibg.it/verdicch/dh.html)

CALENDARIO CORSO



Venerdì h. 11 - 14

F.	20	27				
M.	6	13	20	27		
A.	10	17	23	24	30	
M.	8					

(I - II SOTTOPERIODO)

CALENDARIO CORSO



Venerdì h. 11 - 14

F.	20	27				
M.	6	13	20	27		
A.	10	17	23	24	30	
M.	8					

(I - II SOTTOPERIODO)

CALENDARIO CORSO RECUPERI E CHIUSURA

- **GIOVEDÌ 23 APRILE** **12 - 15** **AULA 9 POLIFUNZIONALE SALVECCHIO**
- **VENERDÌ 24 APRILE** **11 - 14** **AULA 10 SALVECCHIO**
- **GIOVEDÌ 30 APRILE** **11 - 14** **AULA A SEMINARIO**
- **VENERDÌ 8 MAGGIO** **14 - 17** **AULA 1 ROSATE**

CALENDARIO APPELLI

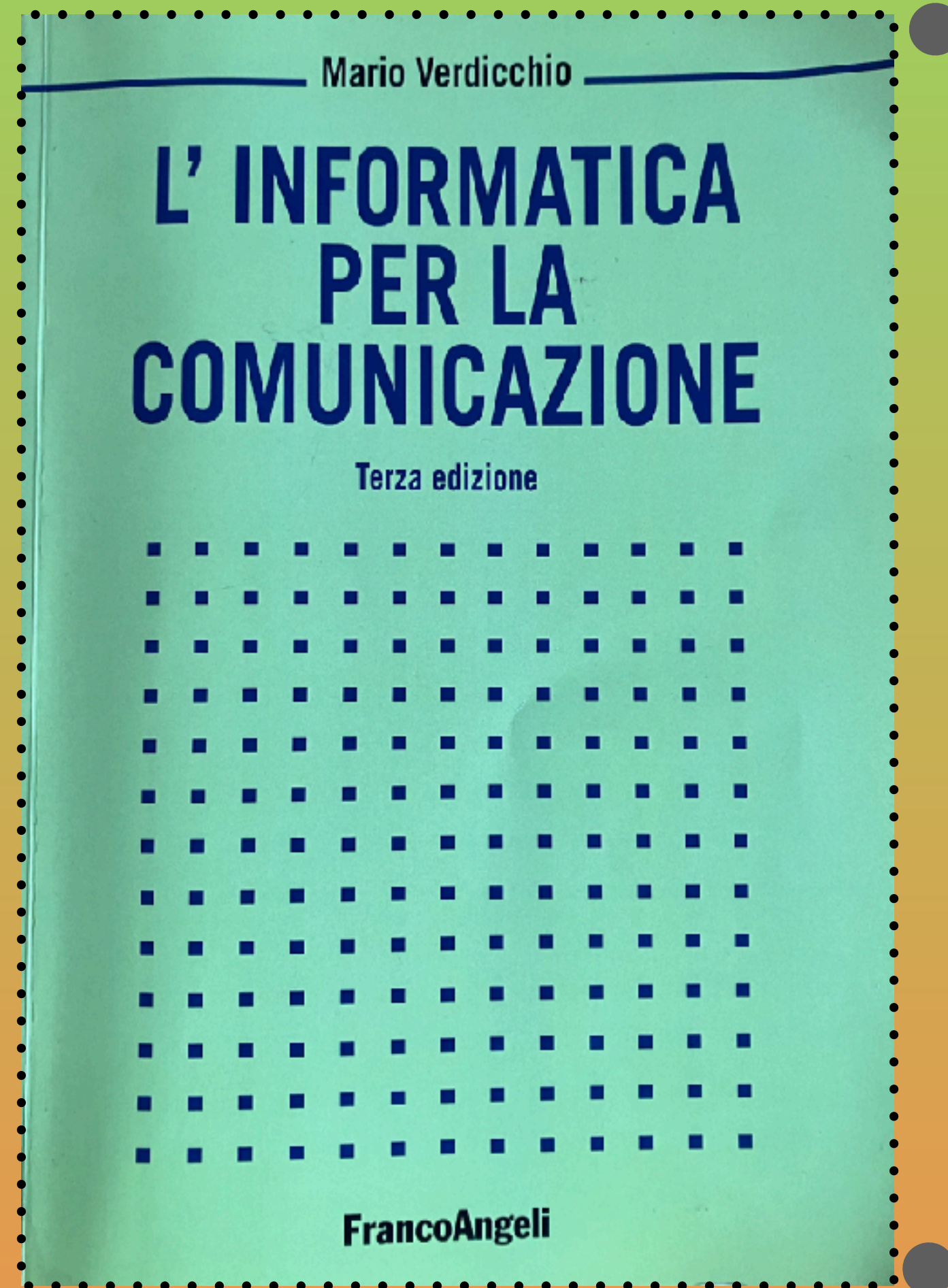
●
0

M.	—	—	—	—	—	—
G.	9					
L.		17		31		
A.				31		
S.		14				

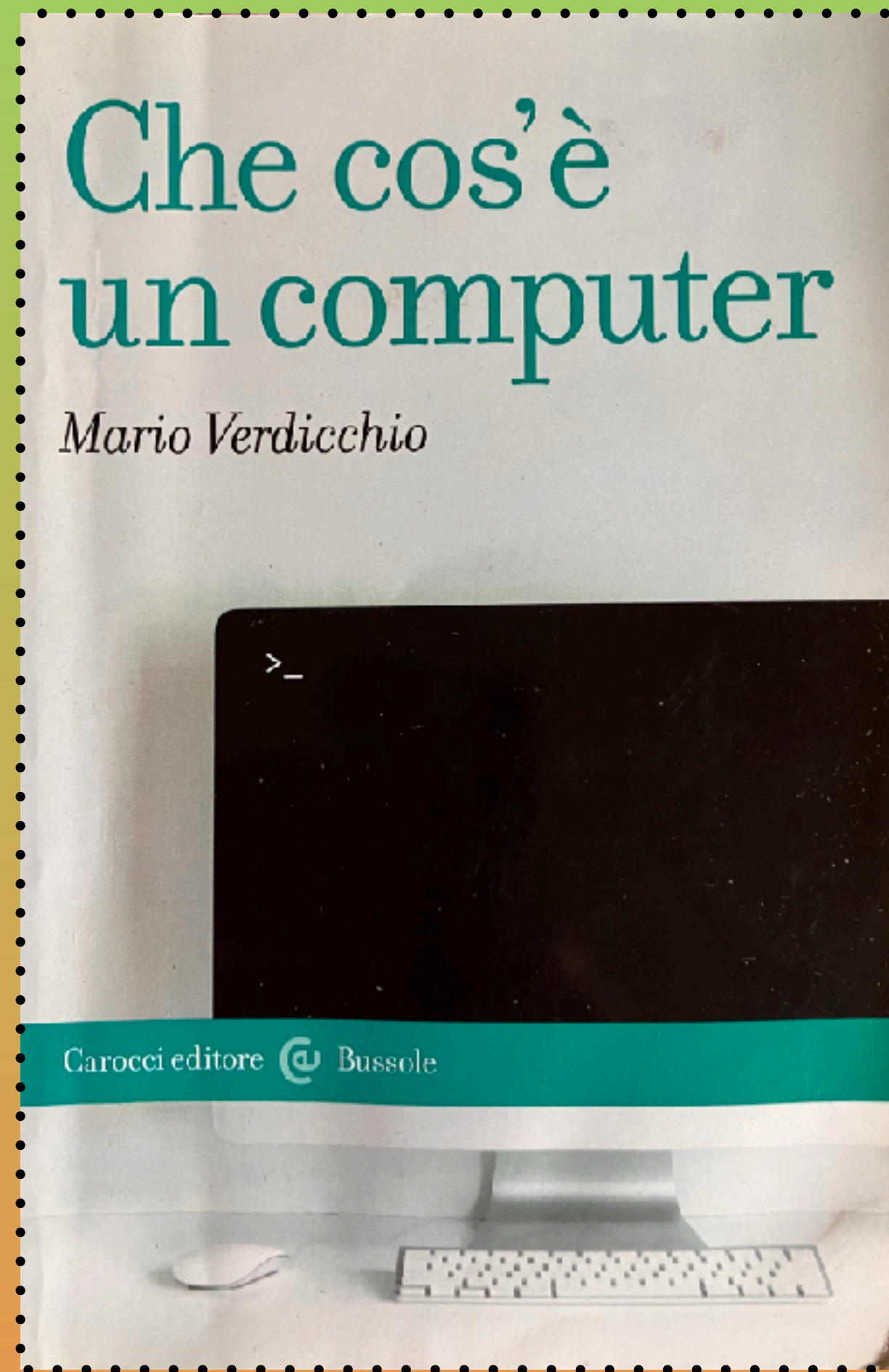
H

H

H16



VERDICCHIO M., *L'INFORMATICA PER LA COMUNICAZIONE*, FRANCO ANGELI, MILANO, 2023 (TERZA EDIZIONE)



CAP. 3

3.3

VERDICCHIO M., *CHE COS'È UN COMPUTER*, CAROCCI, ROMA, 2023



CAP. 2

2.6

SCATTURIN C., VERDICCHIO M., *CHE COS'È IL DIGITALE*, CAROCCI, ROMA, IN CORSO DI PUBBLICAZIONE

DIGITAL HUMANITIES

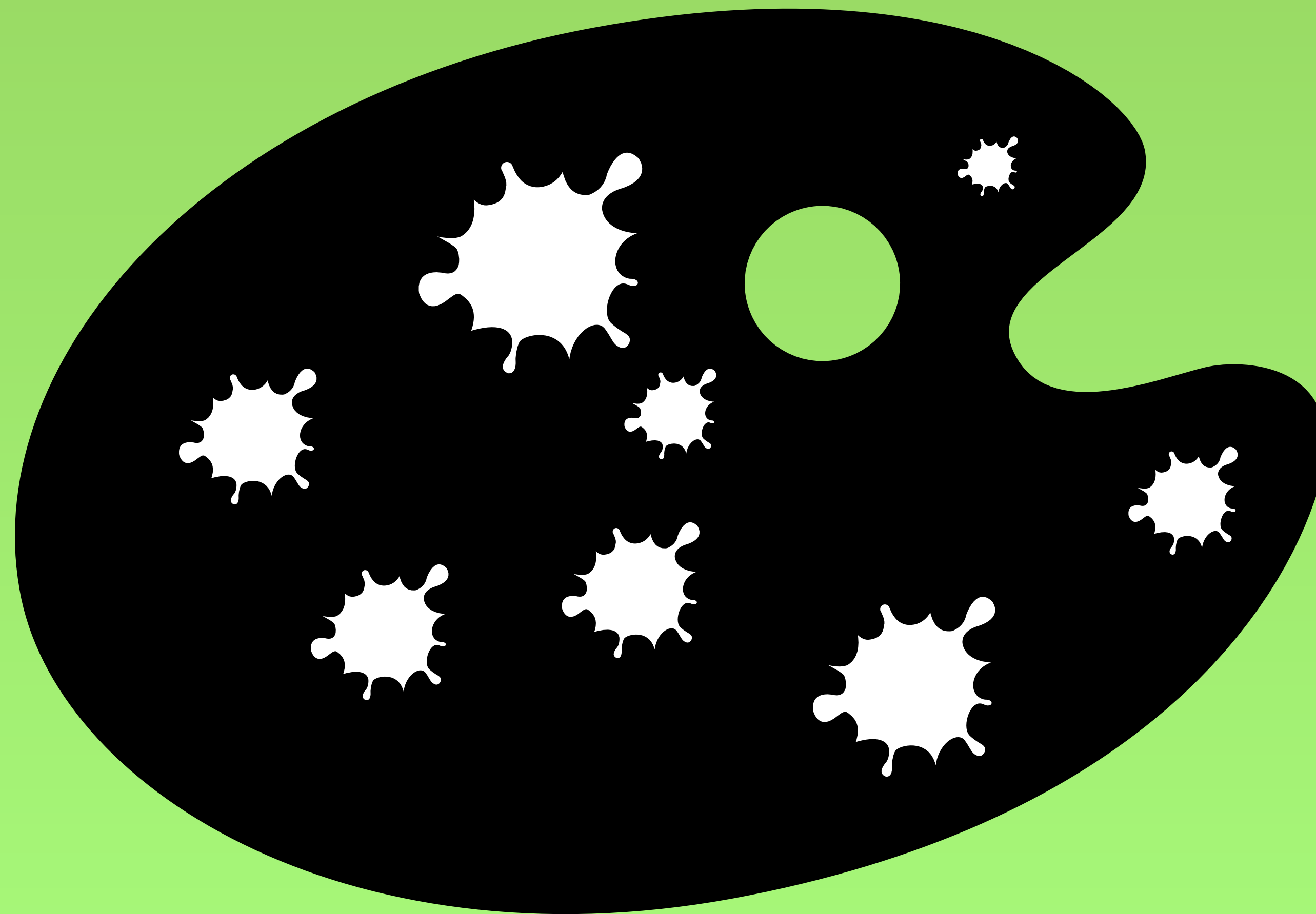


UNIVERSITÀ DEGLI STUDI DI BERGAMO

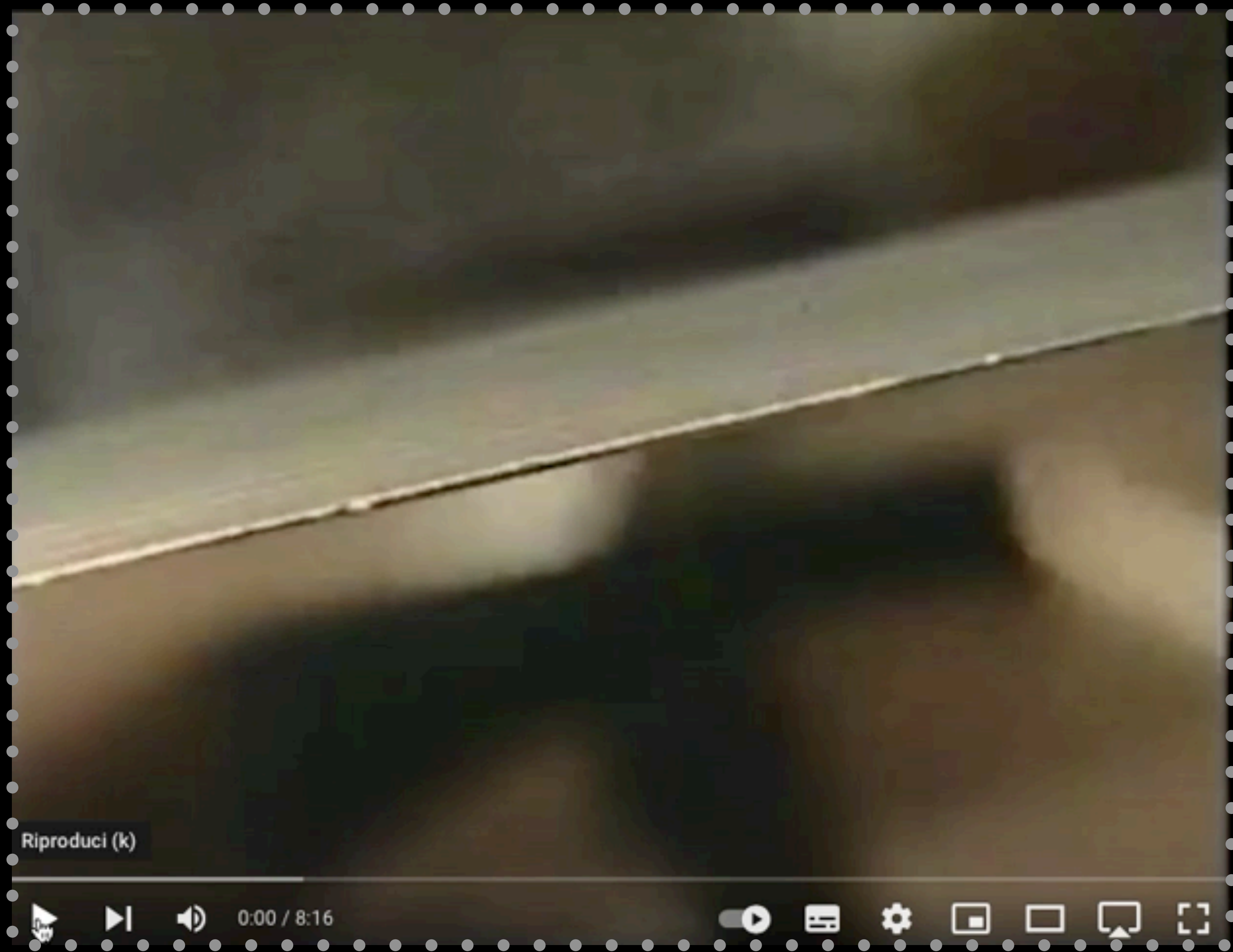
IMMAGINE

TESTI

SUONO



METODO DIGITALE DEI SUONI



JOHN DAVICK (regista), JOEL MARKS (produttore)

Sound, acoustics and recording

(I volti dell'energia. Il suono. Produzione e propagazione del suono - Fenomeni sonori - Acustica e registrazione)

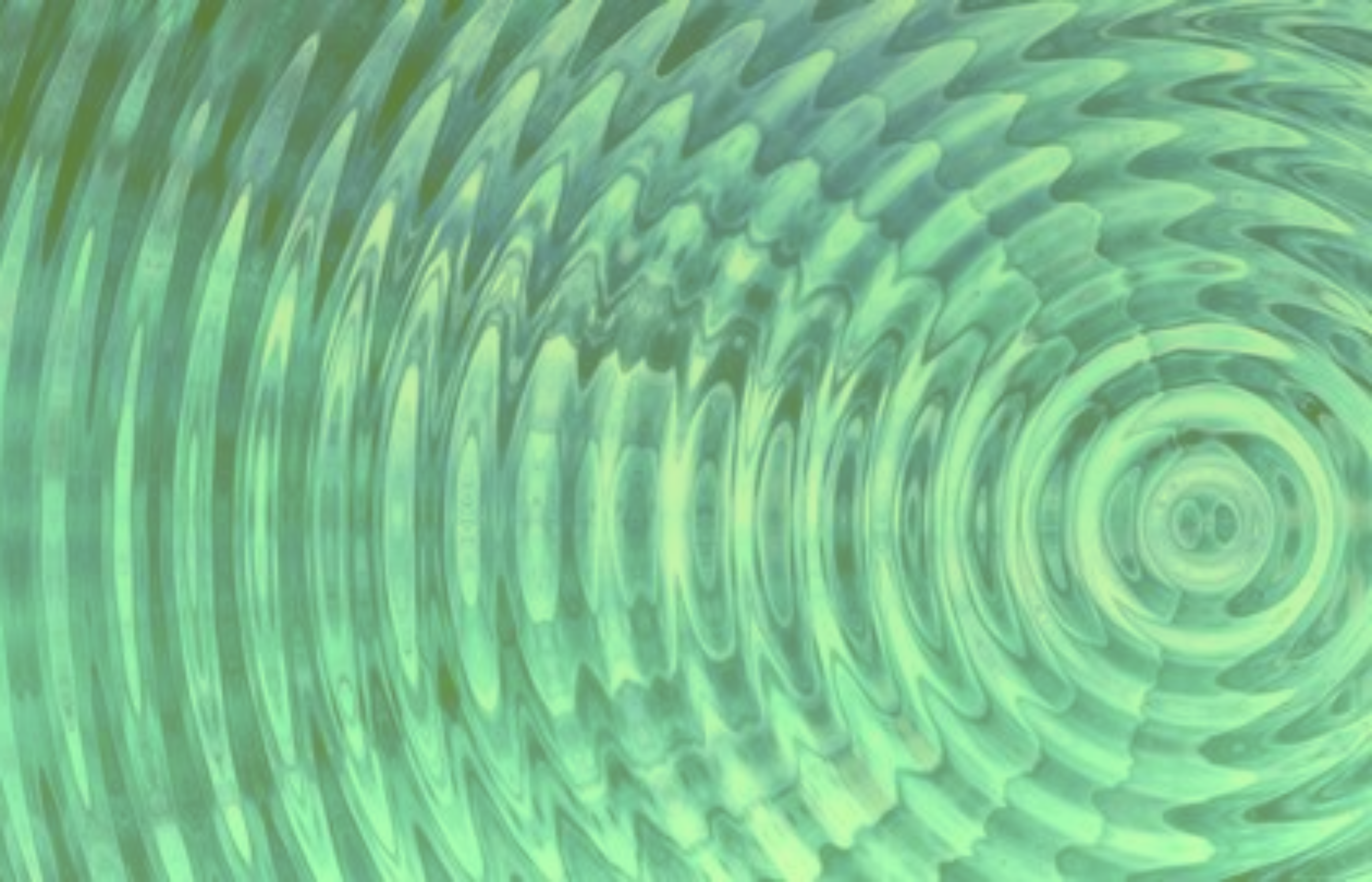
Parte 1

1986

Coronet.Films

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=CHP3H_I0X4](https://www.youtube.com/watch?v=CHP3H_I0X4)





V I B R A Z I O N I





La propagazione è Direttamente proporzionale alla densità del mezzo





A L I E N

In space no one can hear you scream.

COSA HANNO TUTTI I SUONI DIVERSI CHE PERCEPIAMO IN COMUNE?

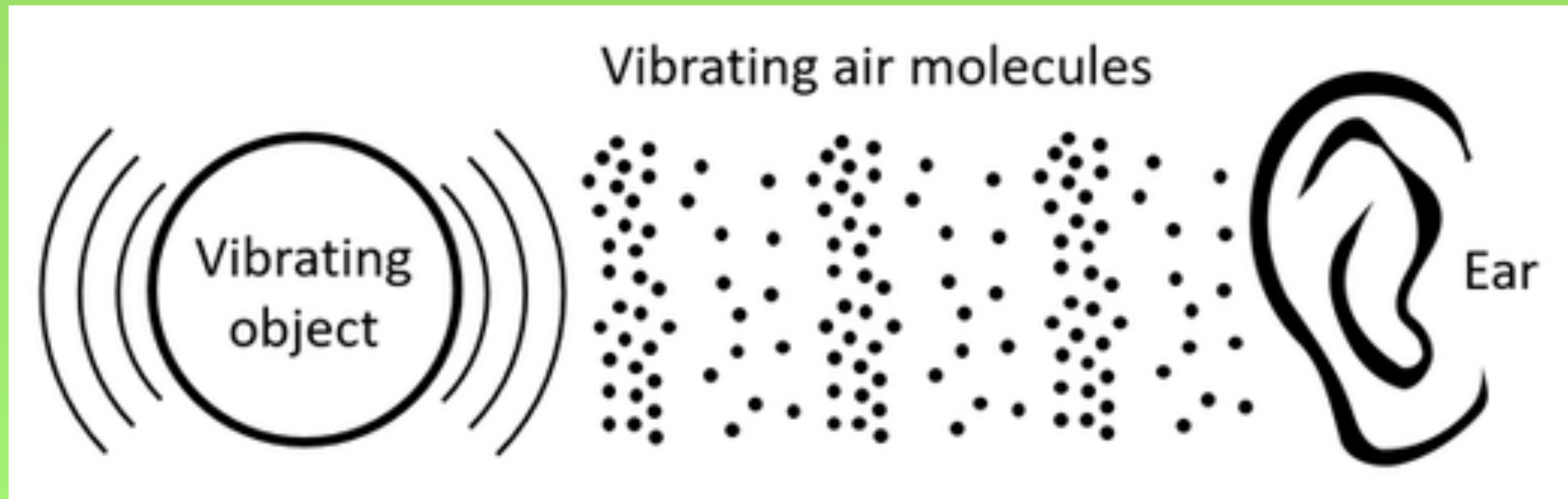
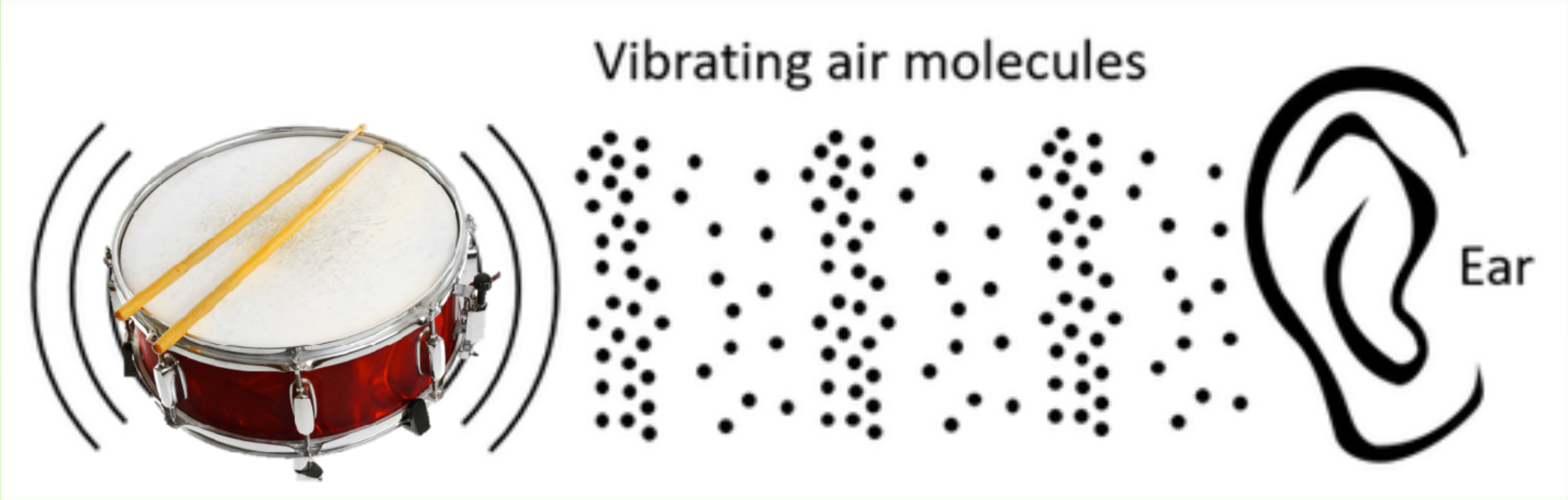


Image courtesy of We Grow Thinkers. (<http://wegrowthinkers.weebly.com/>)

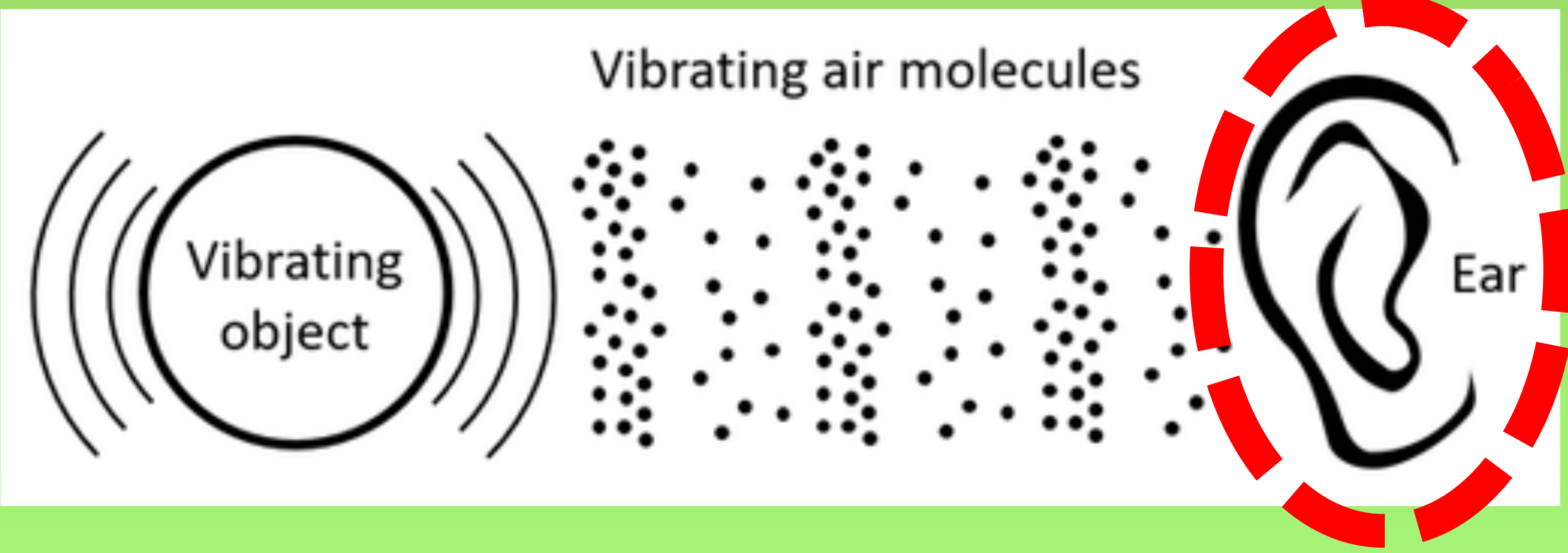
**V
I
B
R
A
Z
I
O
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I**



1

2

3









TIMBRO/FORMA DELL'ONDA

ALTEZZA / VOLUME

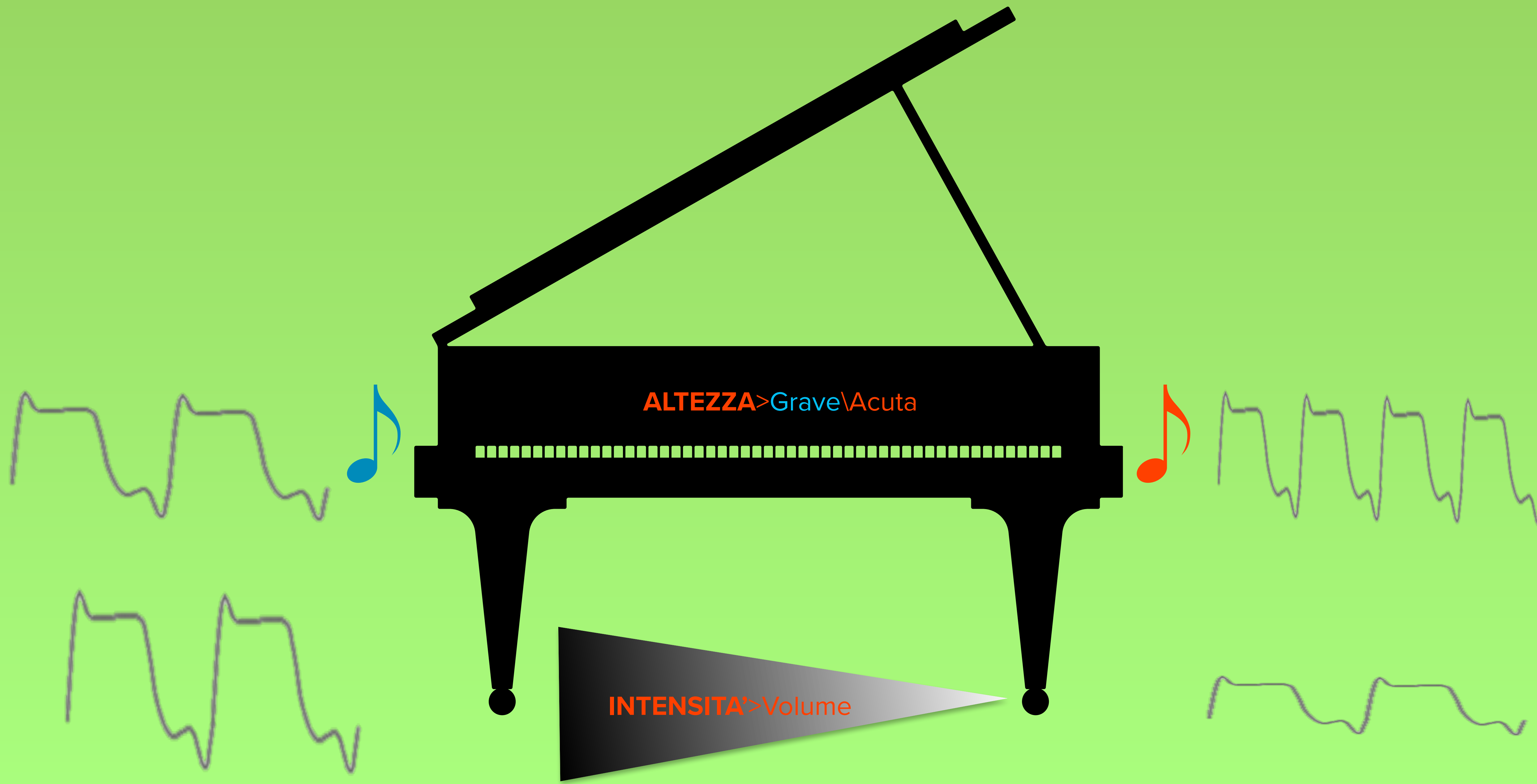


INTENSITA' / FREQUENZA PICCO



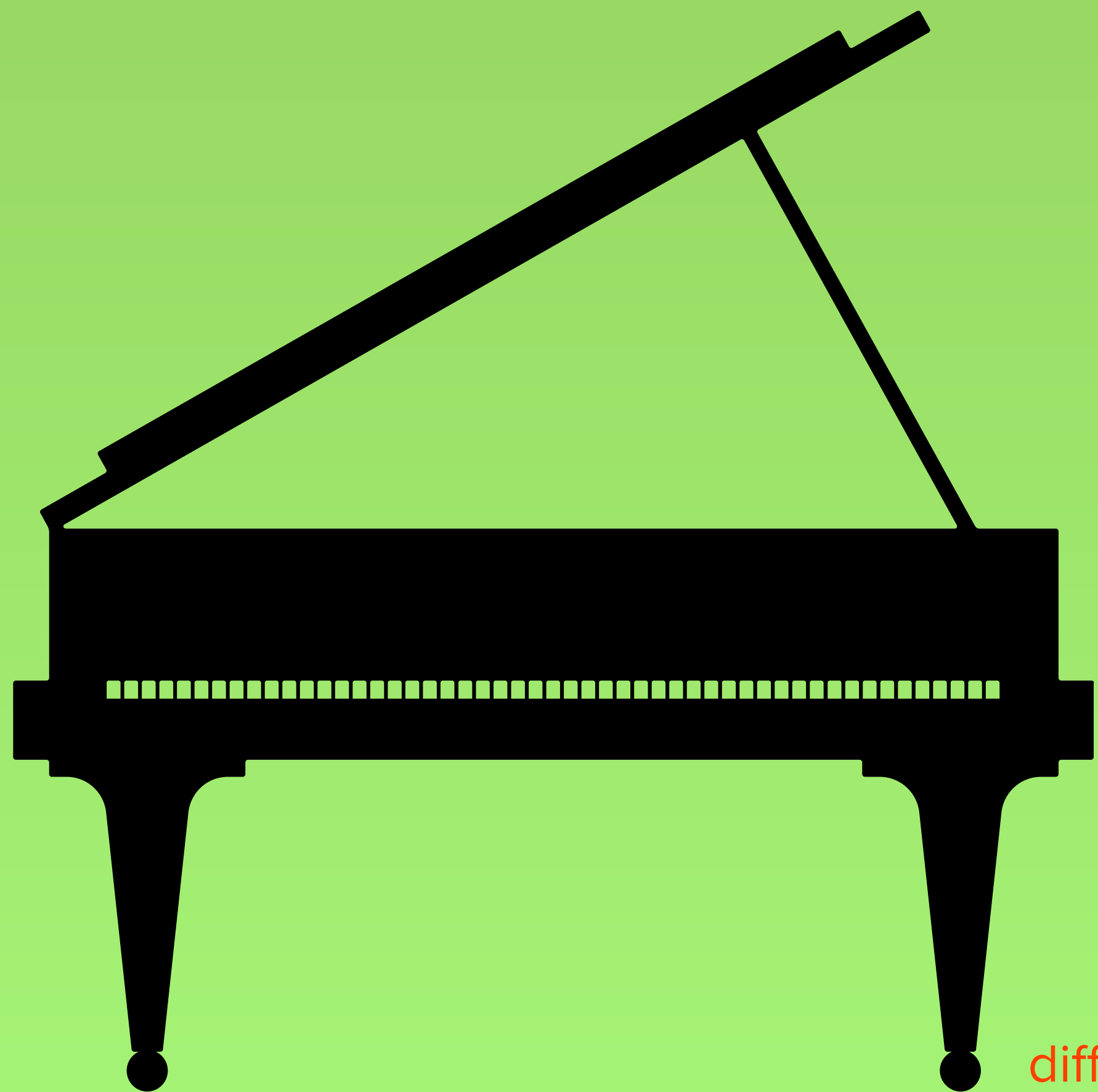


Tanto maggiore è la lunghezza d'onda, ovvero la distanza tra i due picchi, tanto minore è la frequenza, diversa l'intensità del suono che può essere grave o acuta.

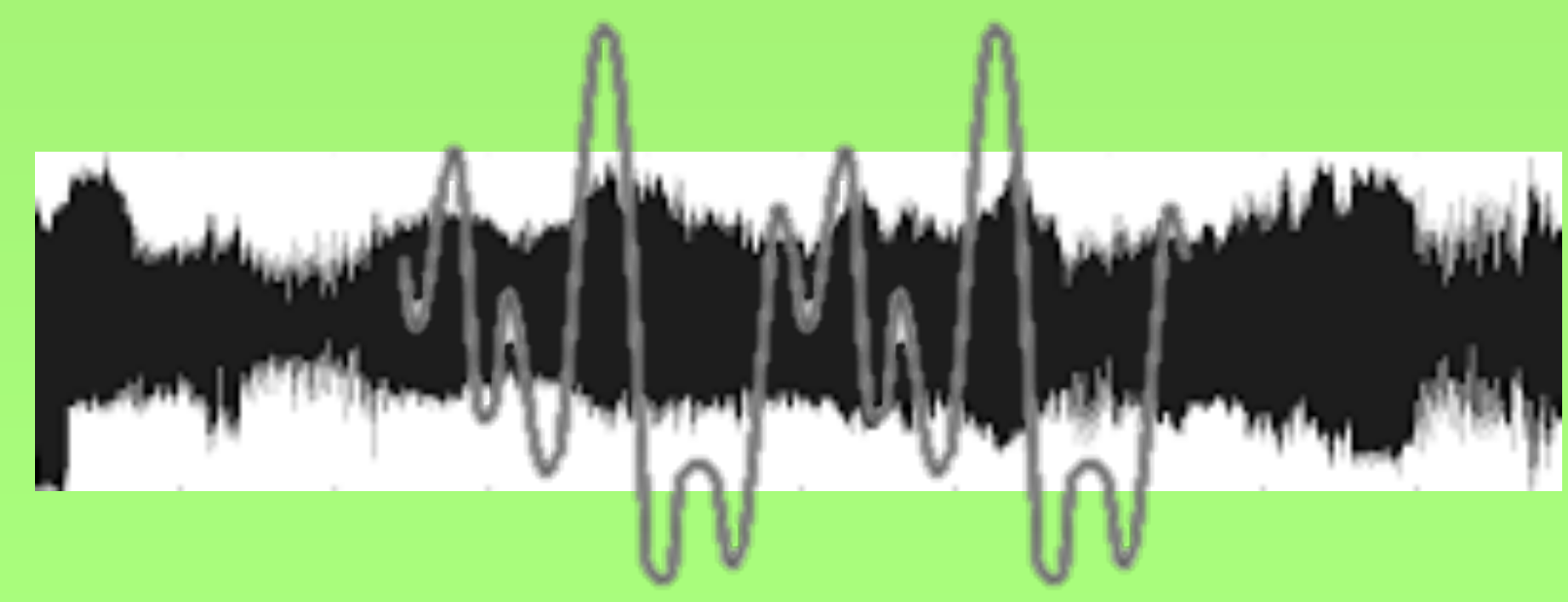
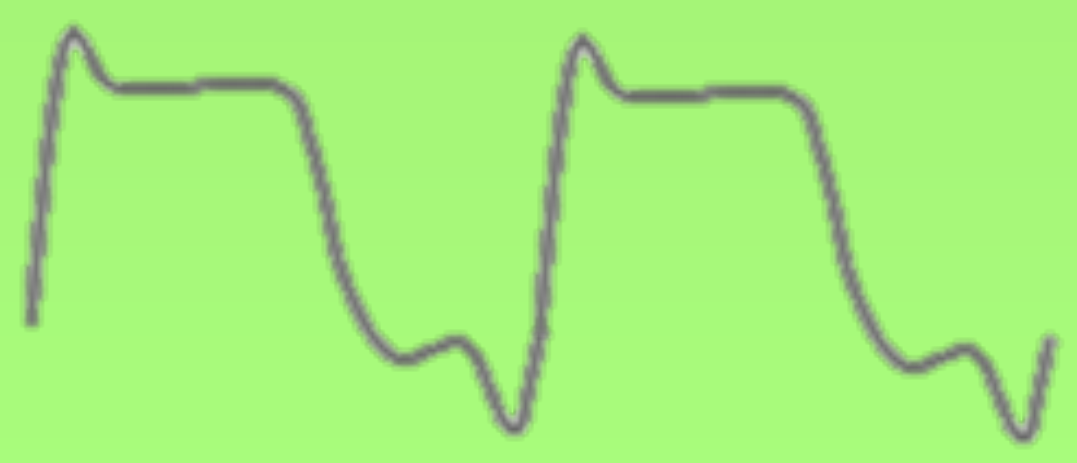


ALTEZZA>Grave\Acuta

INTENSITA'>Volume



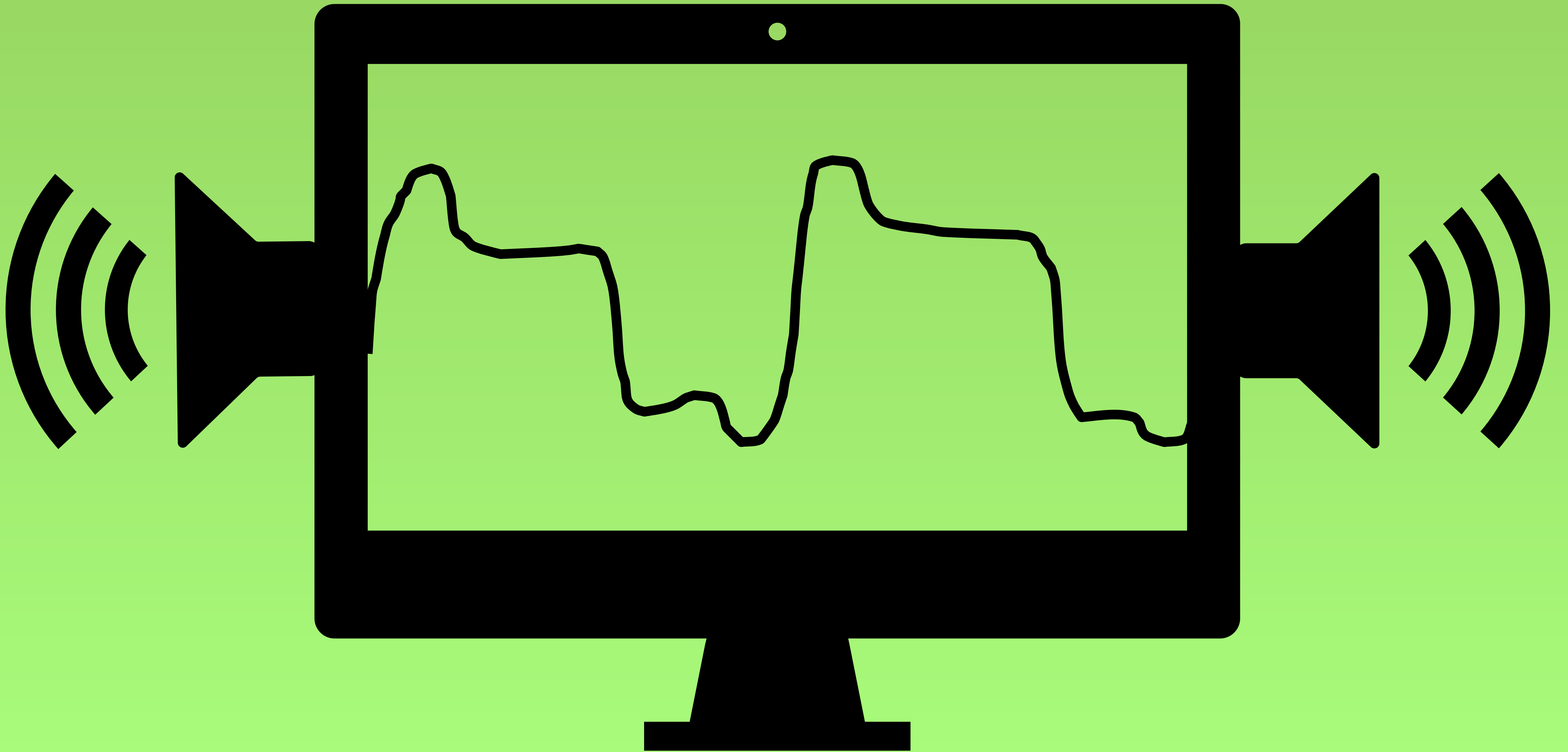
TIMBRO>
differenze di suono a parità di nota

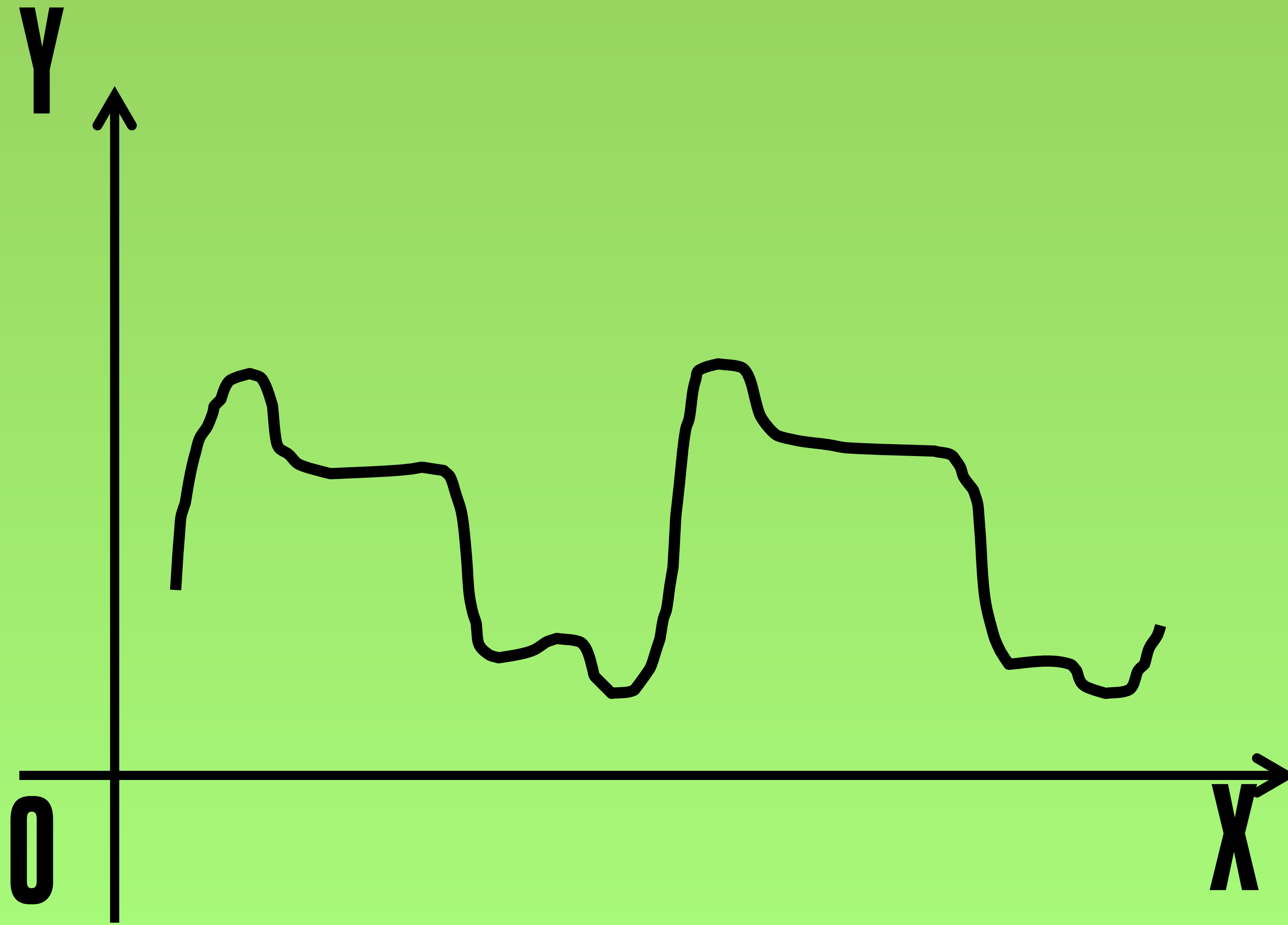


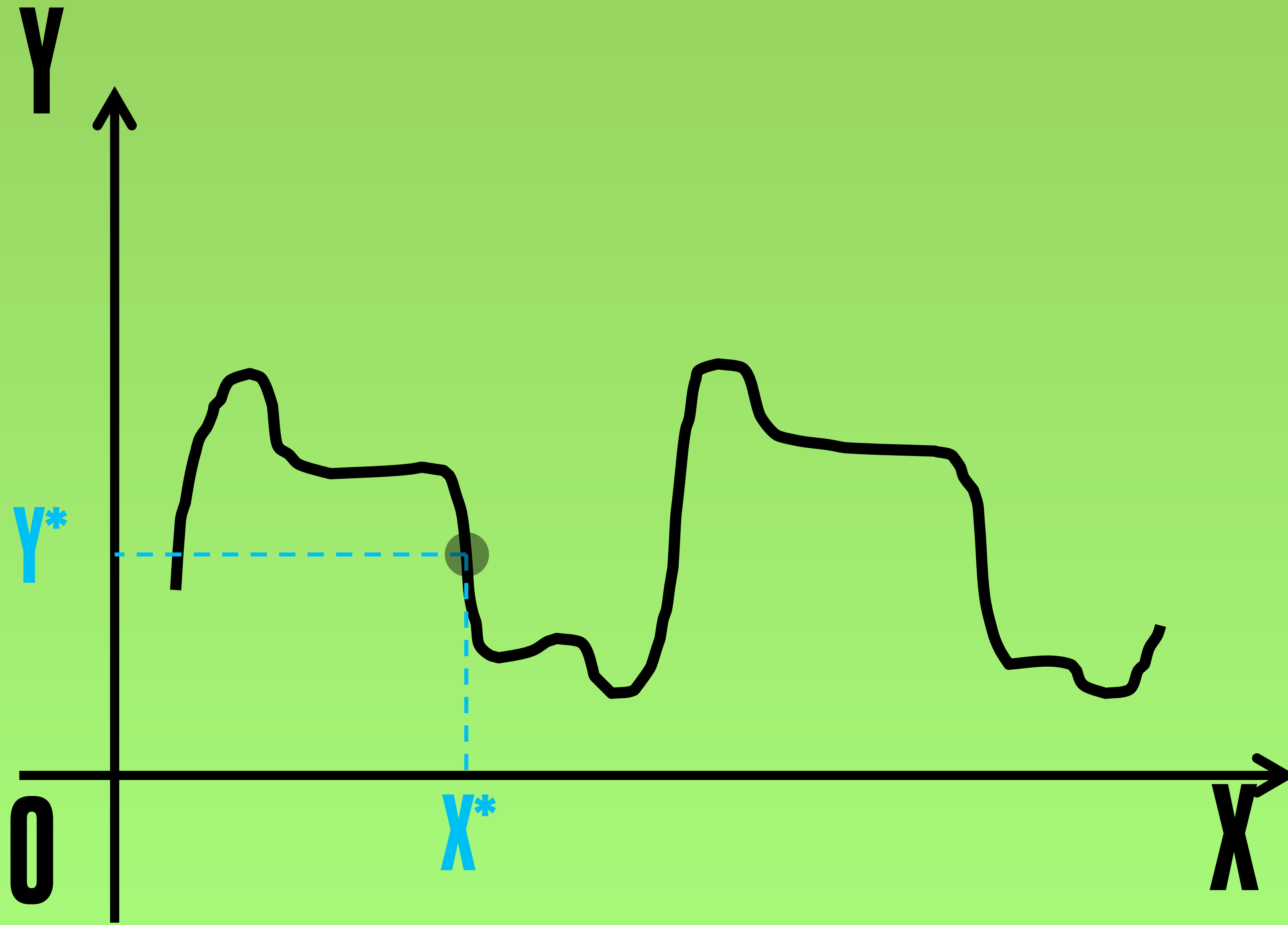


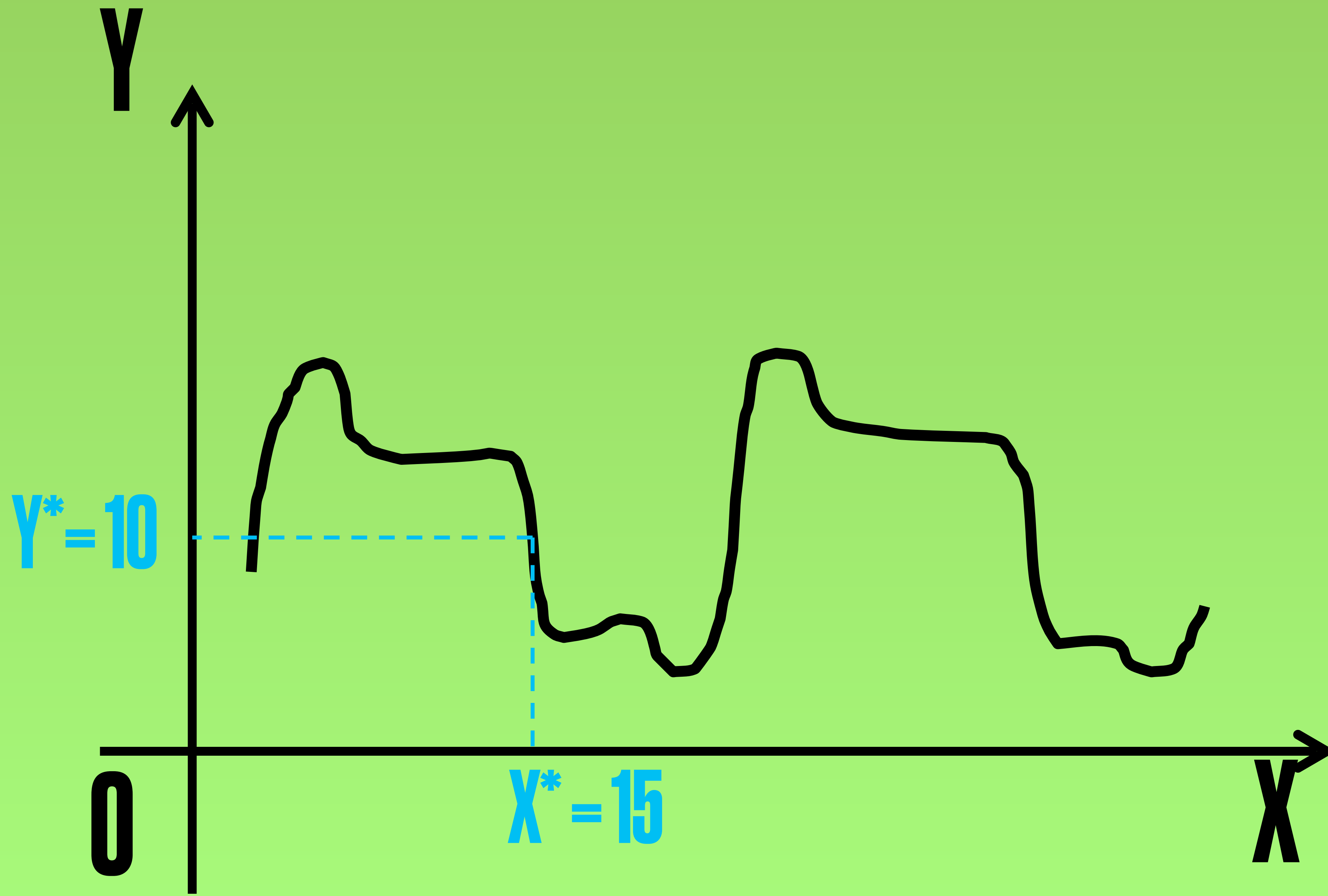
SUONO

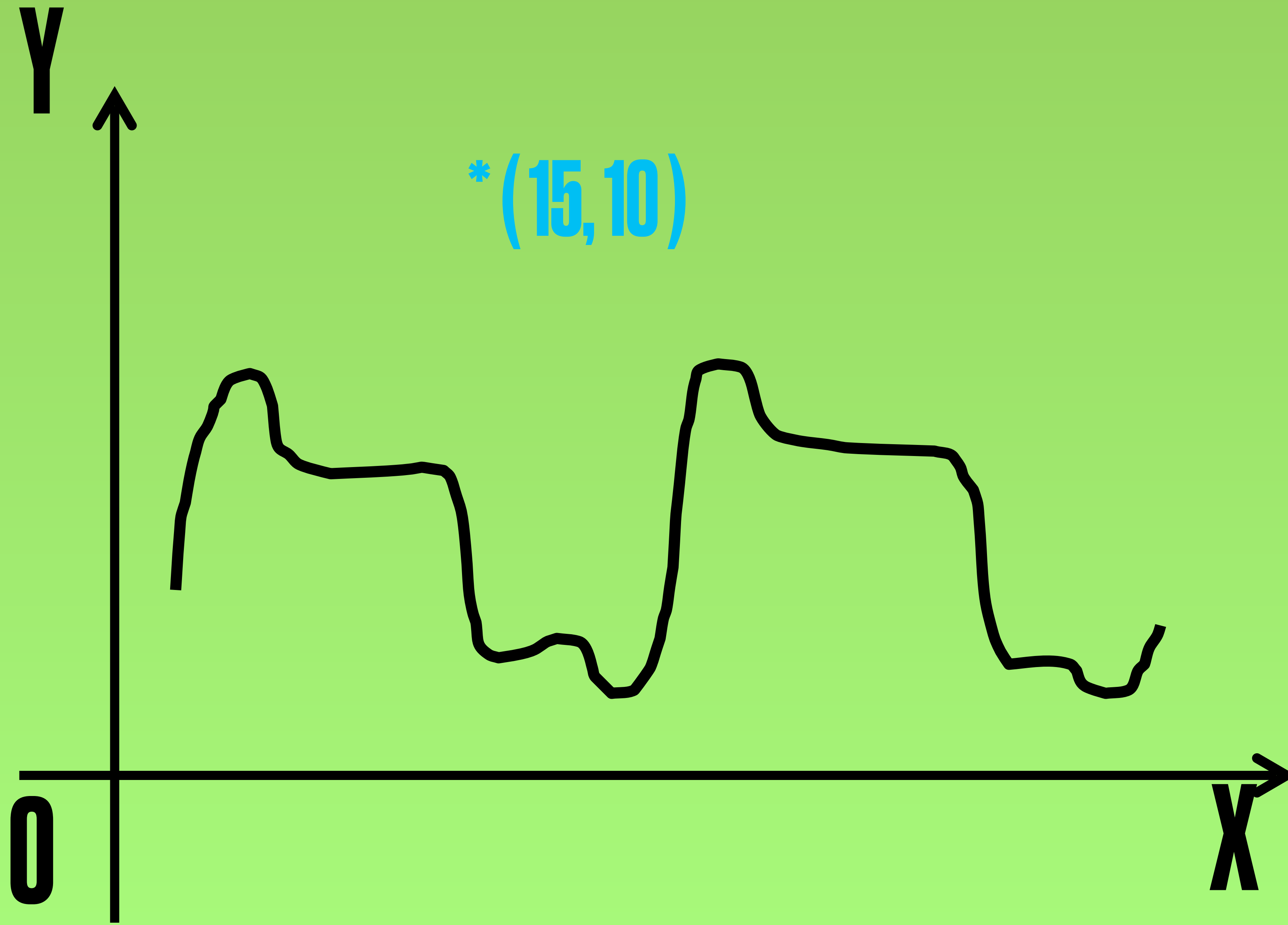




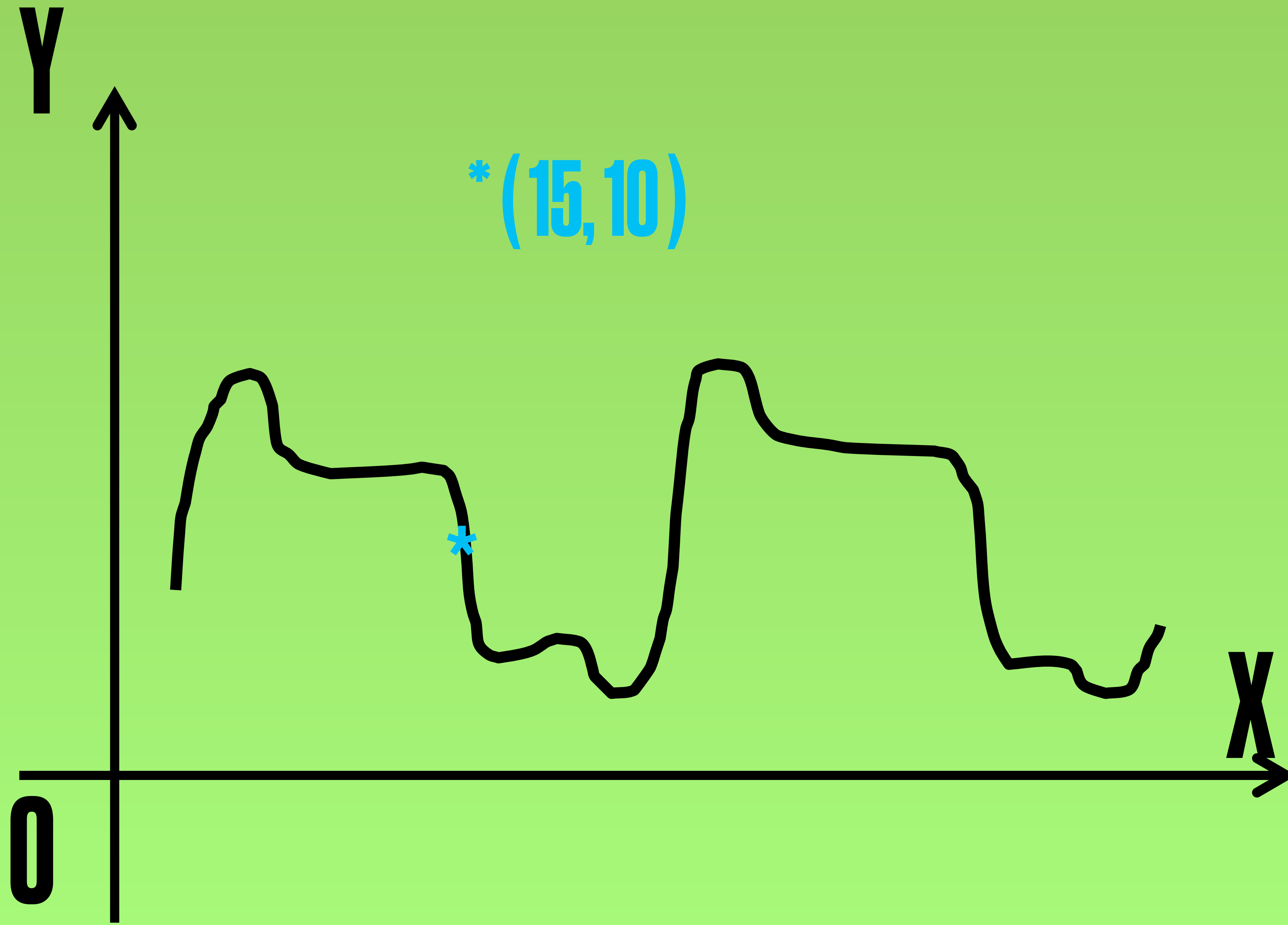




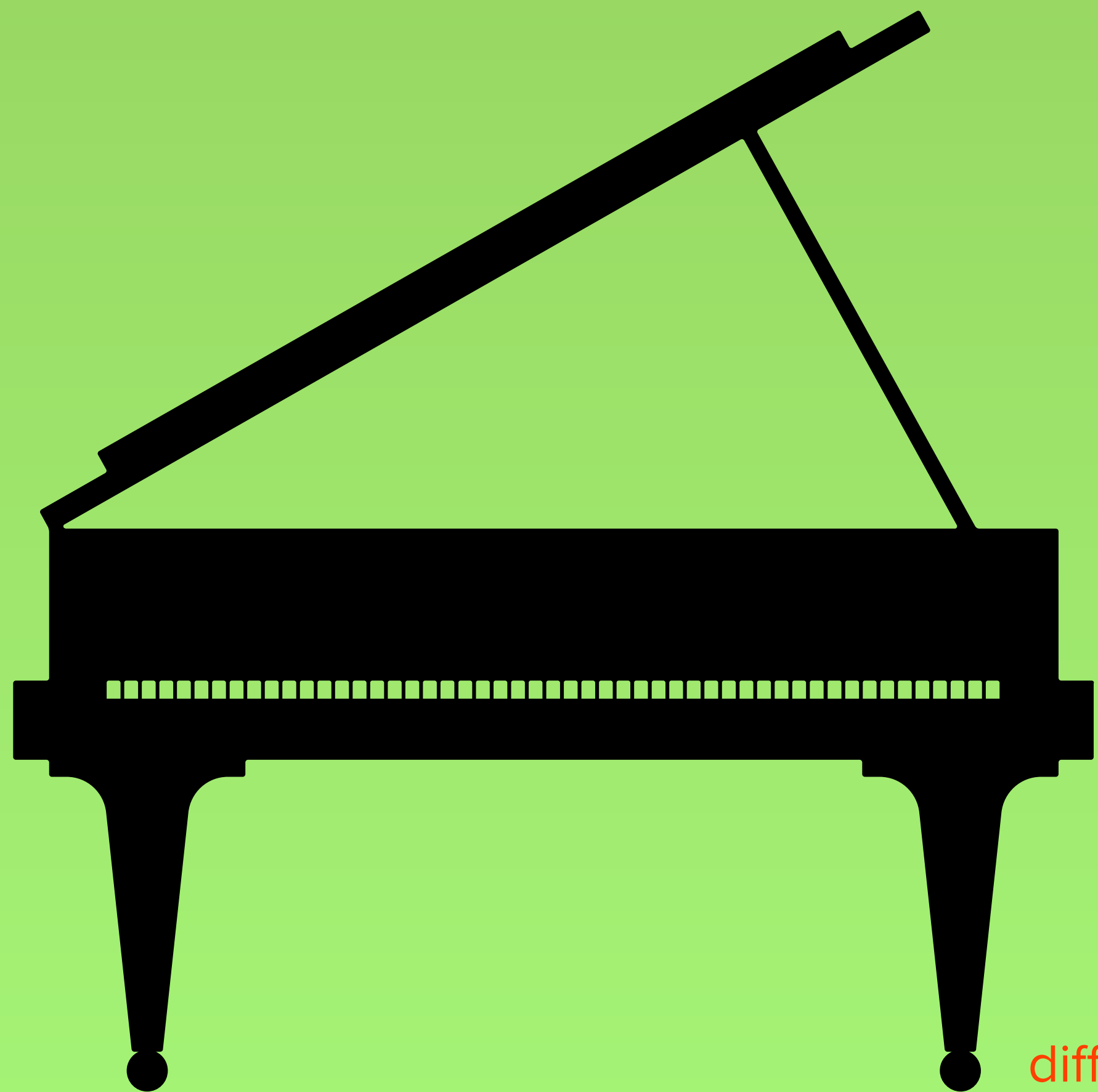




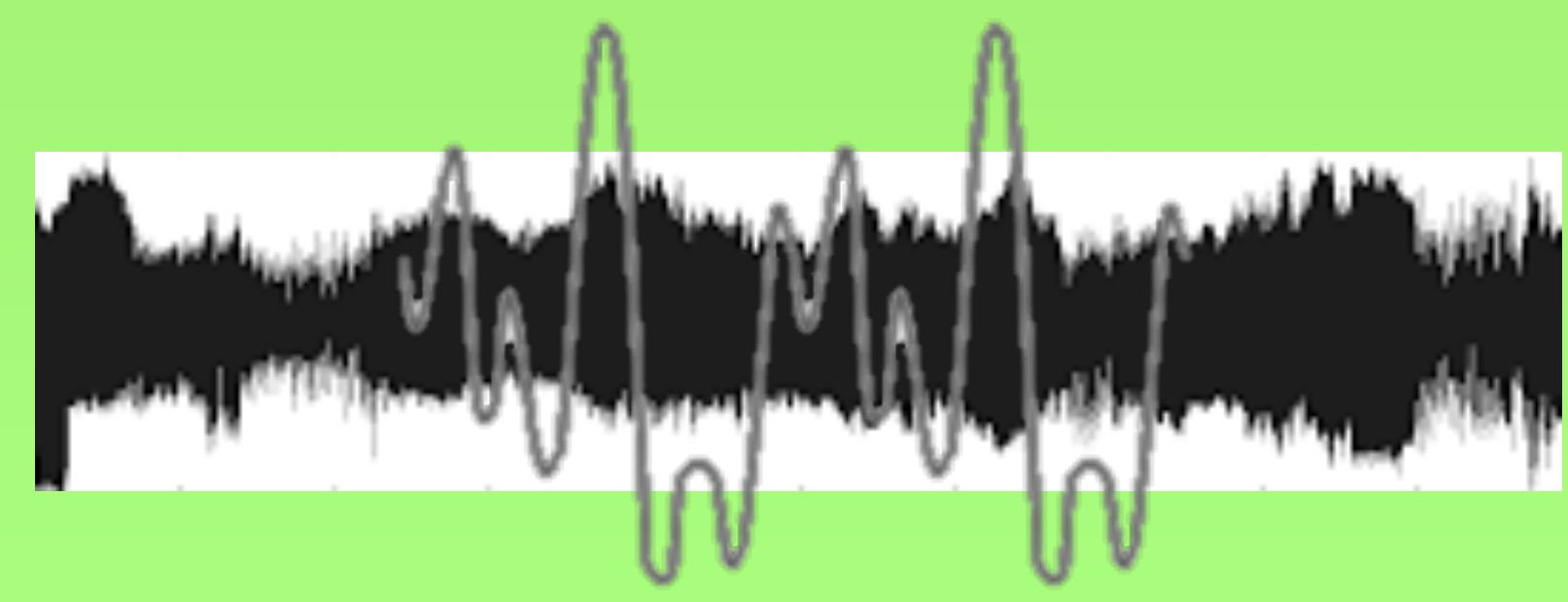
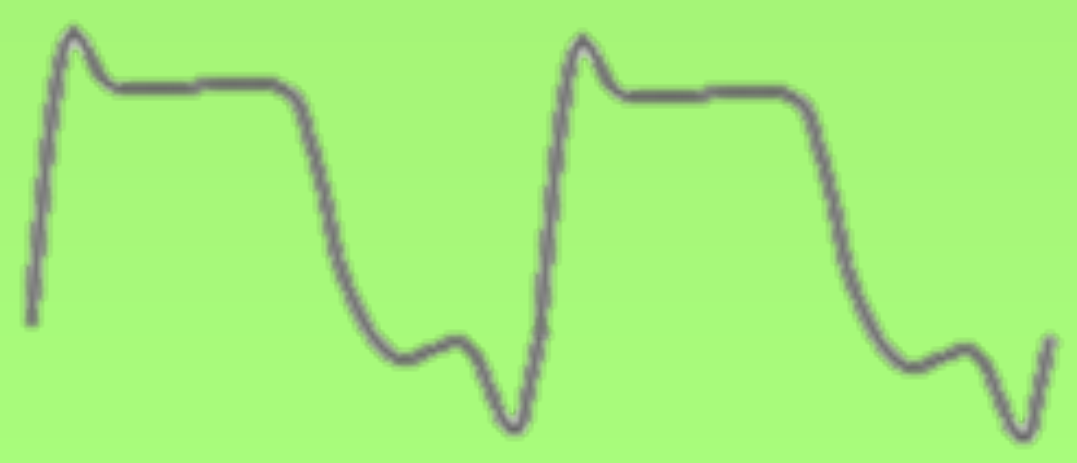


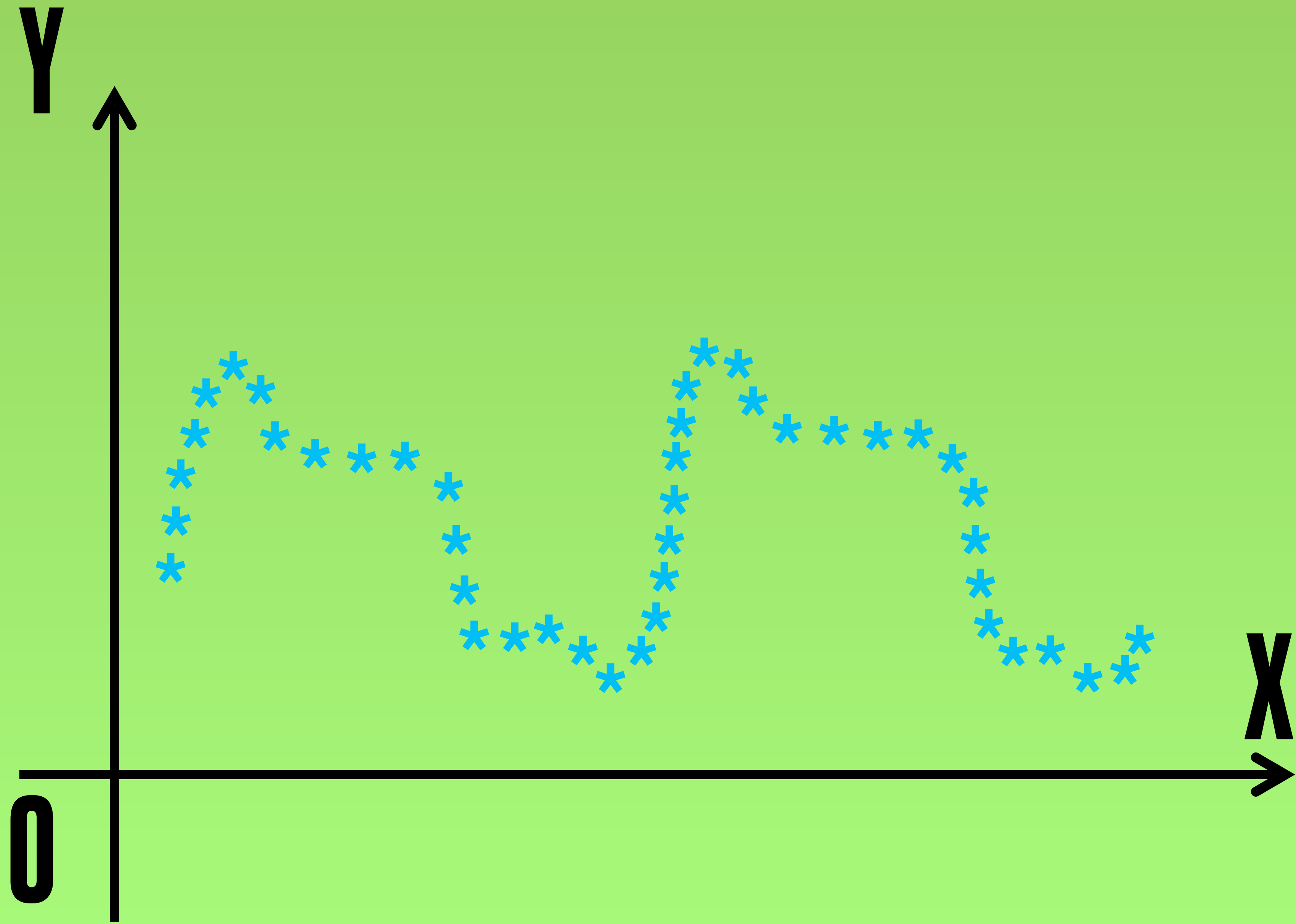






TIMBRO>
differenze di suono a parità di nota





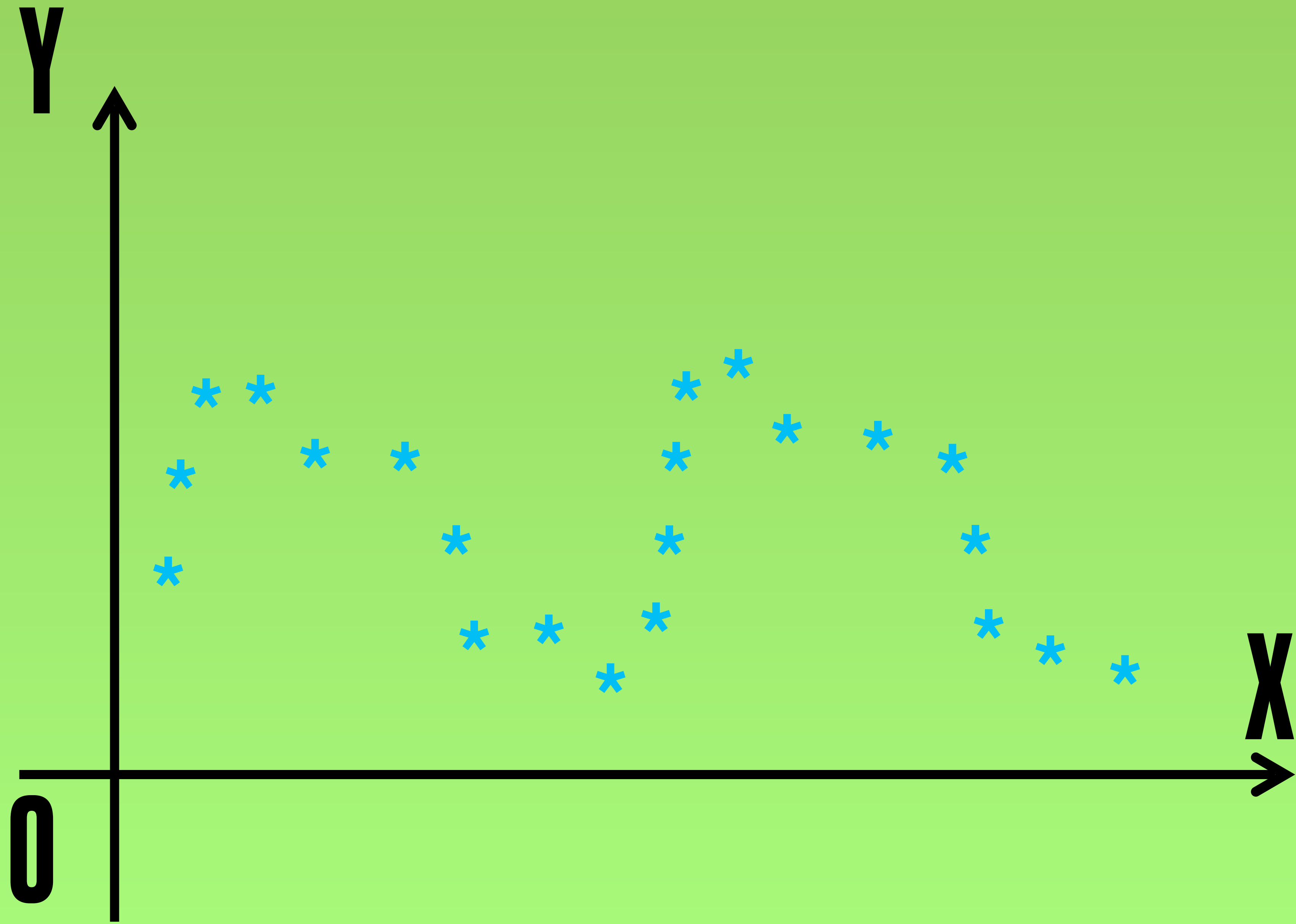
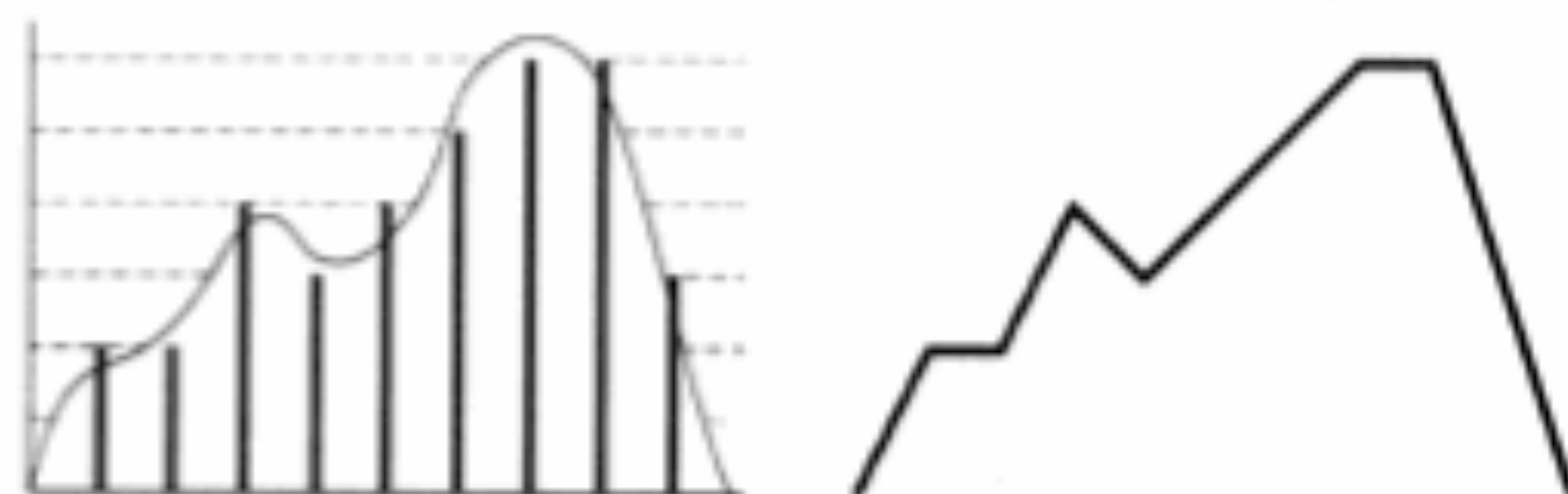
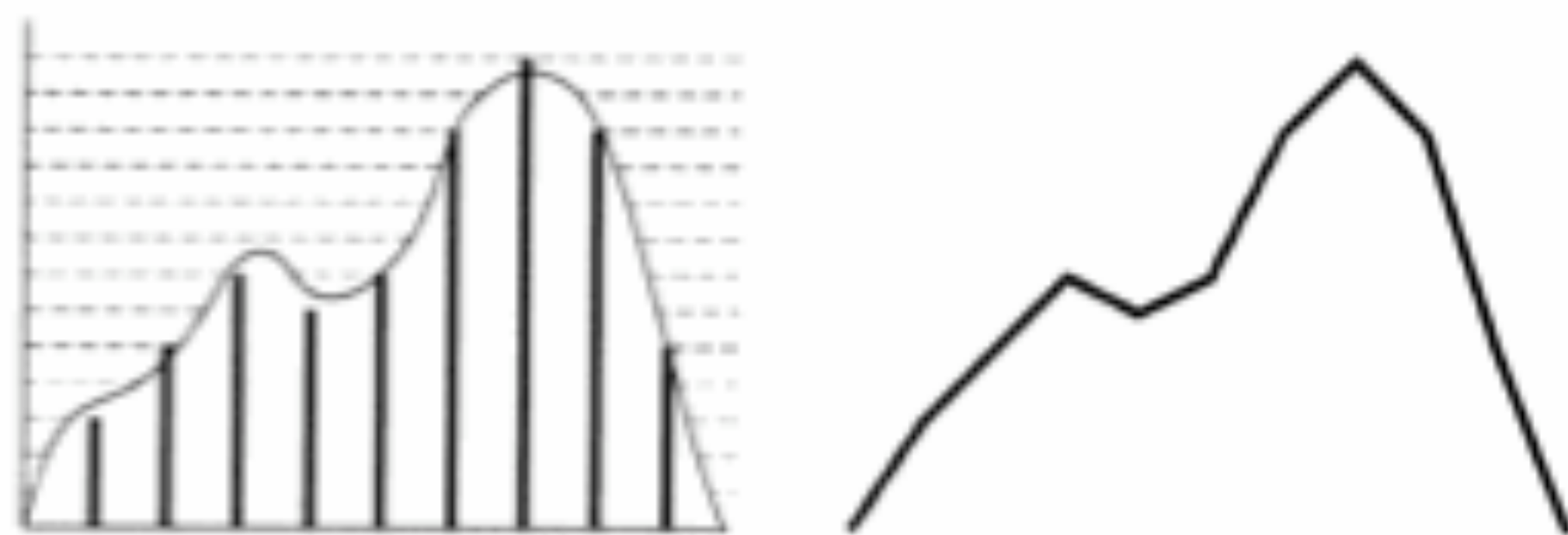


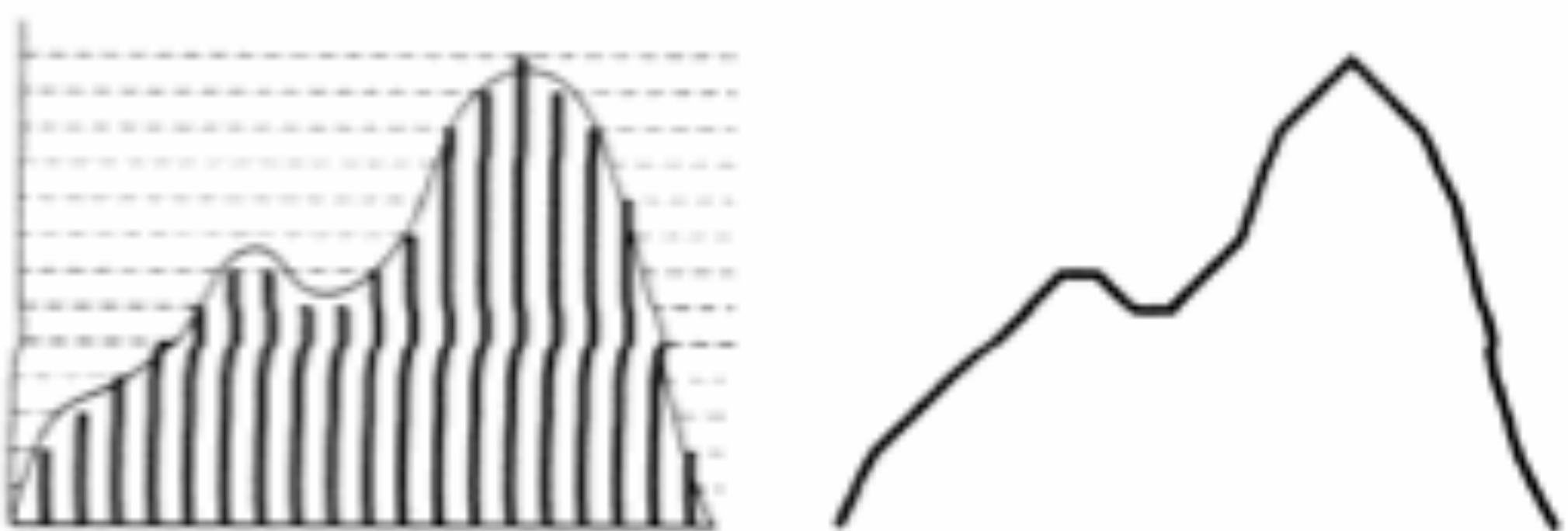
Figure 20 - Effect of Increased Resolution and Sampling Rates



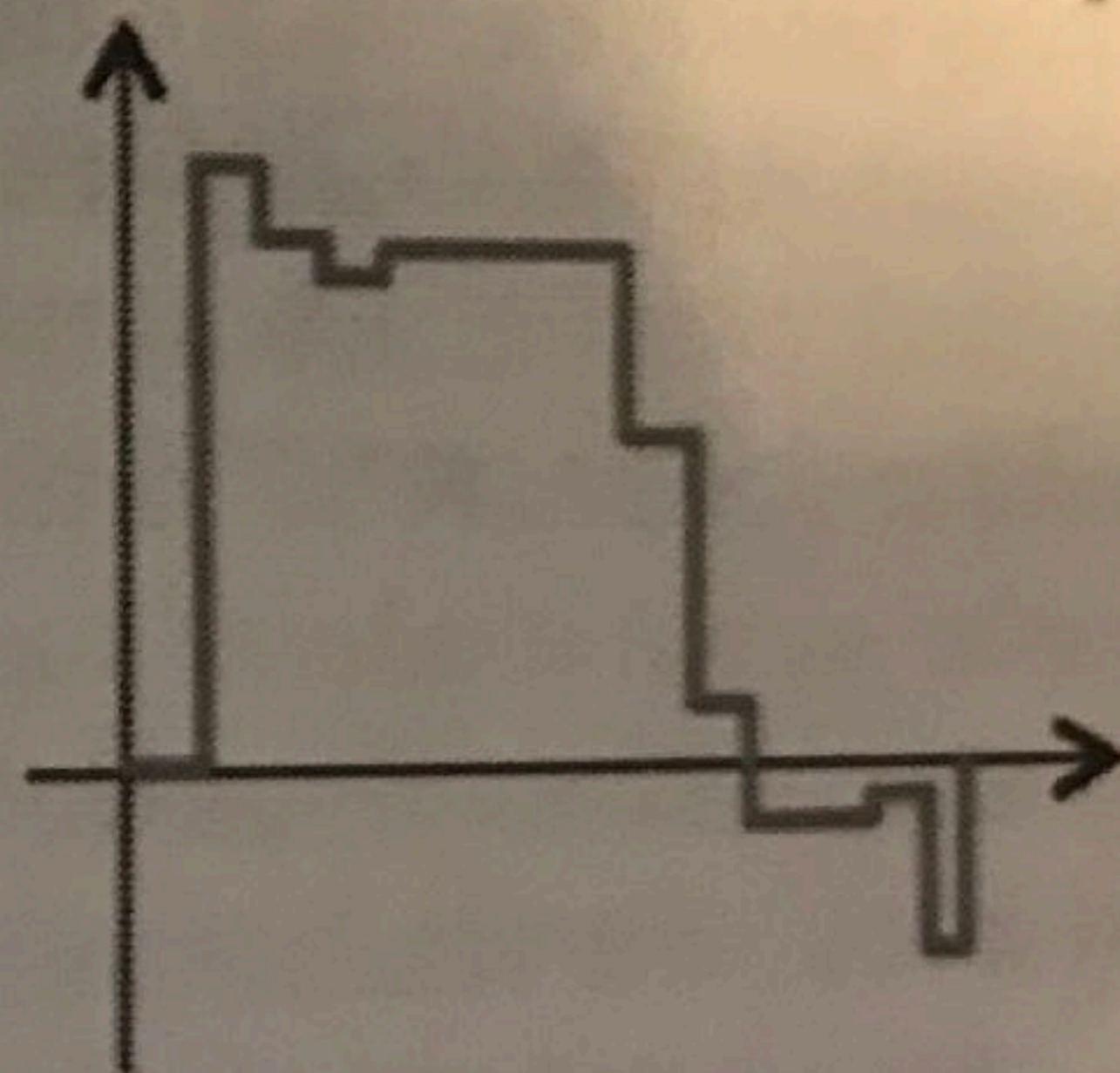
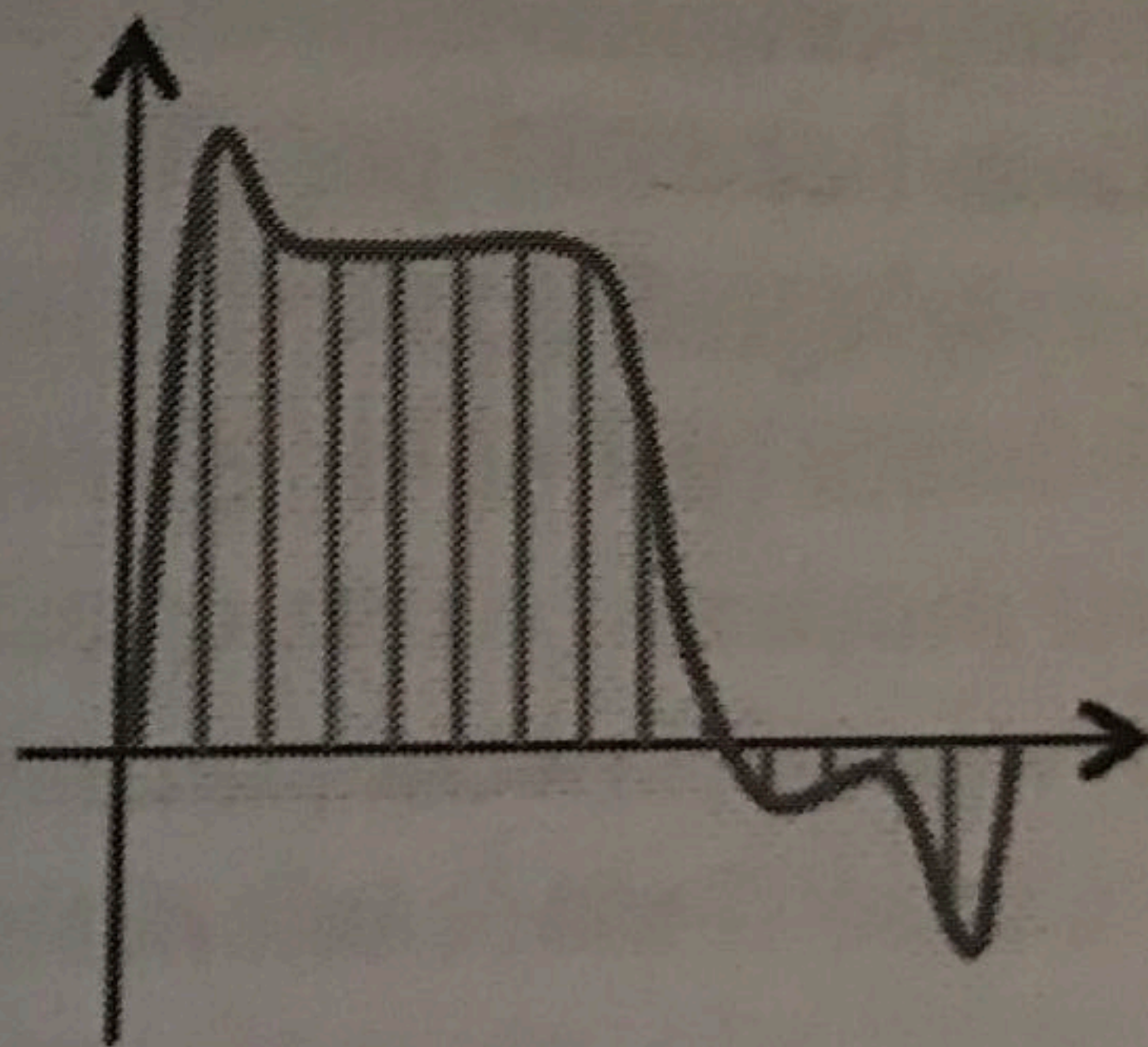
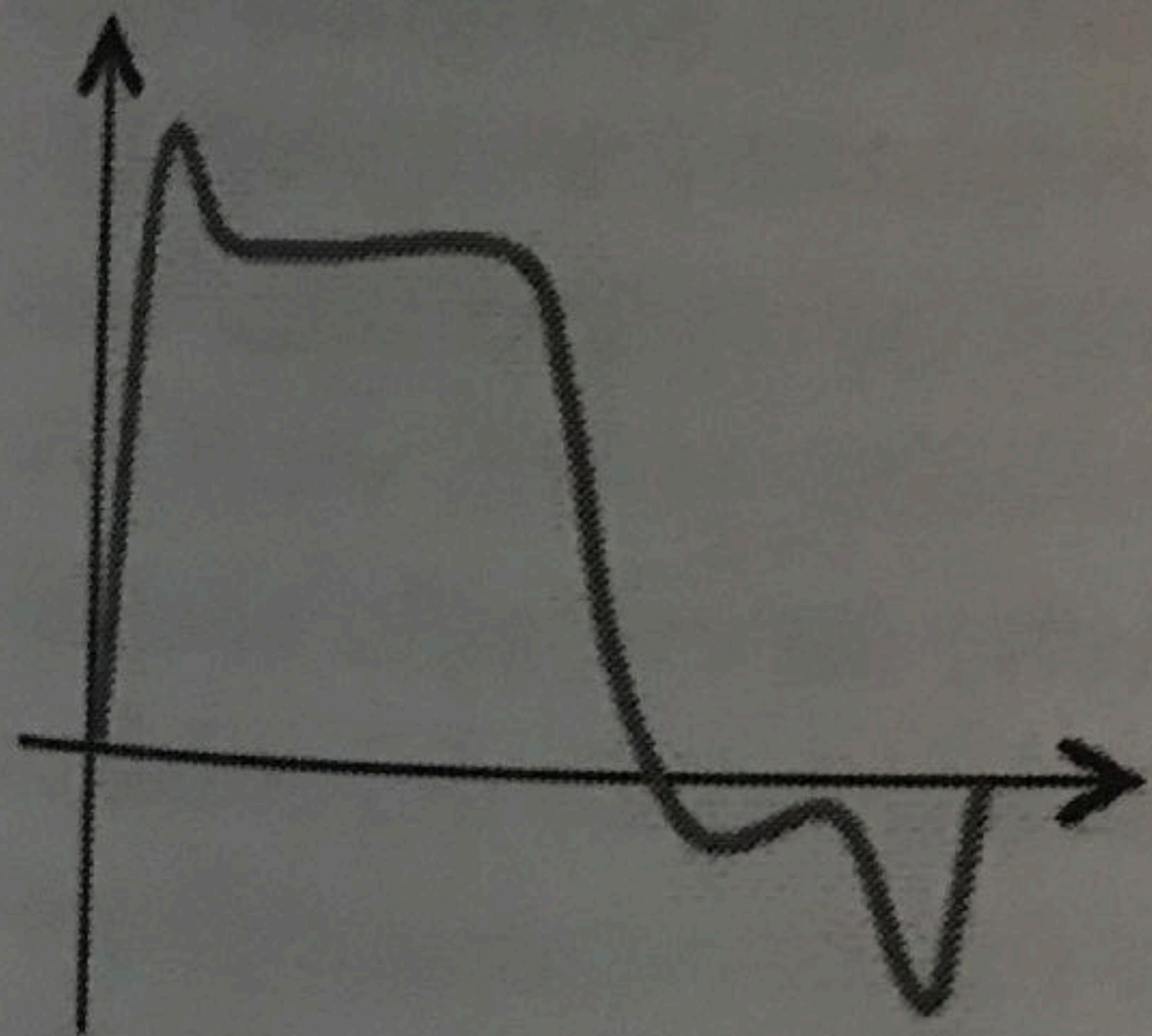
Low Resolution and Sampling Rate



Increased Resolution



Increased Resolution and Sampling Rate



CAMPIONAMENTO

- **PIÙ CAMPIONI ABBIAMO MIGLIORE È LA DESCRIZIONE **NUMERICA** DELL'ONDA**

(1, 23) (2, 30) (3, 28) (4, 30)
(5, 29) (6, 35) (7, 37) (8, 22)
(9, 18) (10, 13) (11, 8) (12, 2)
(13, 4) (14, 8) (15, 10) (16, 18)
(17, 20) ...

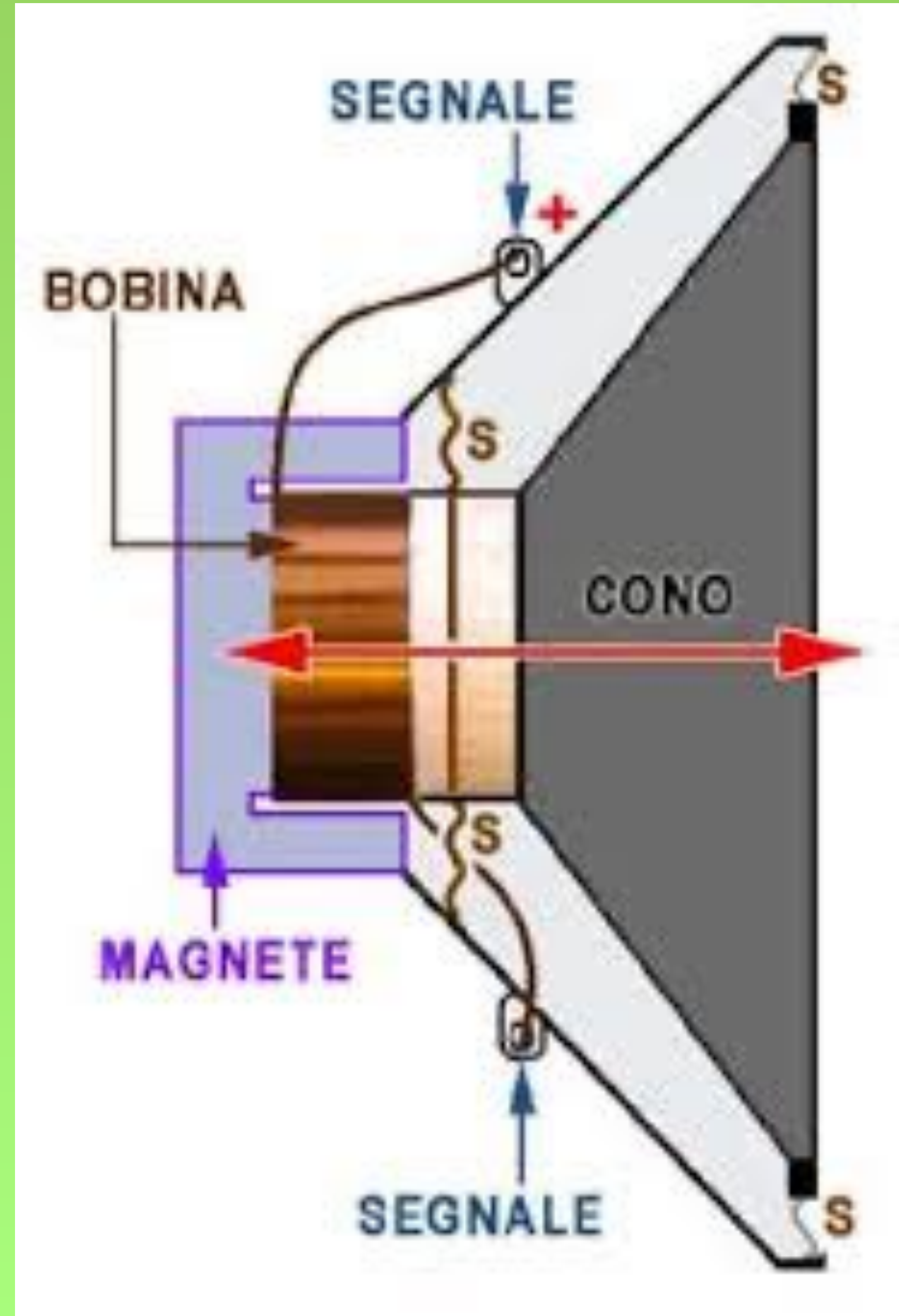


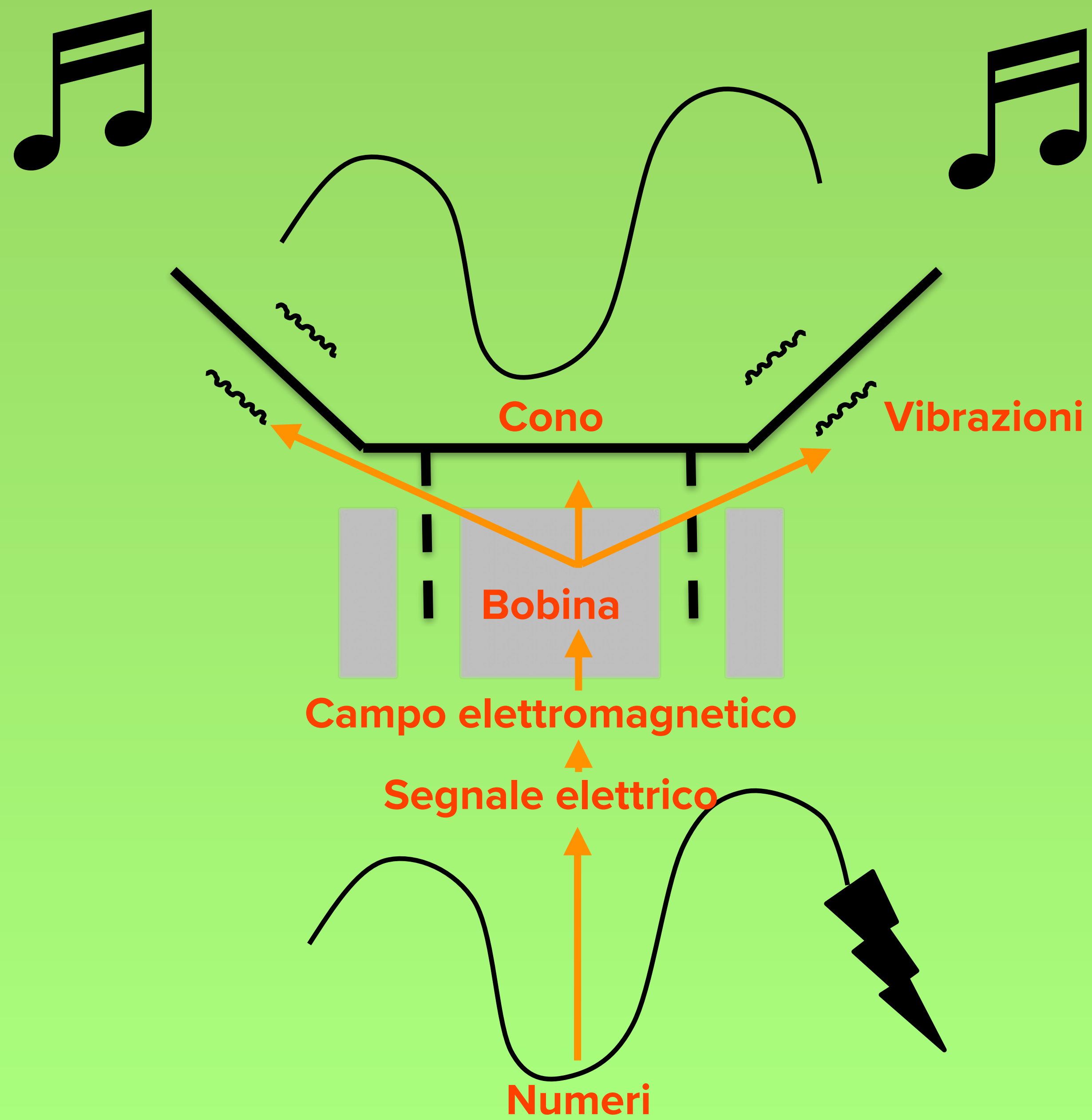
Standard MP3

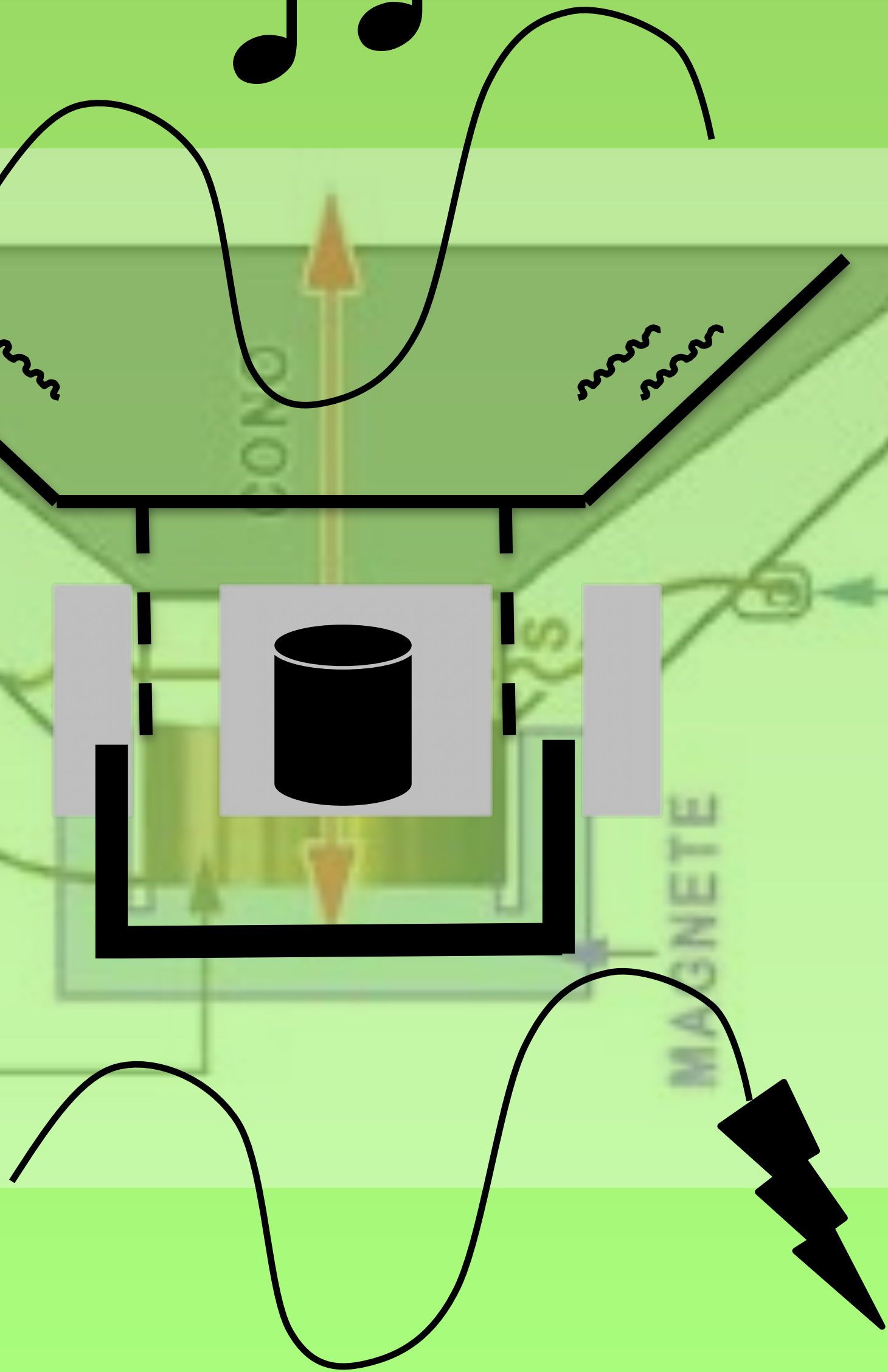
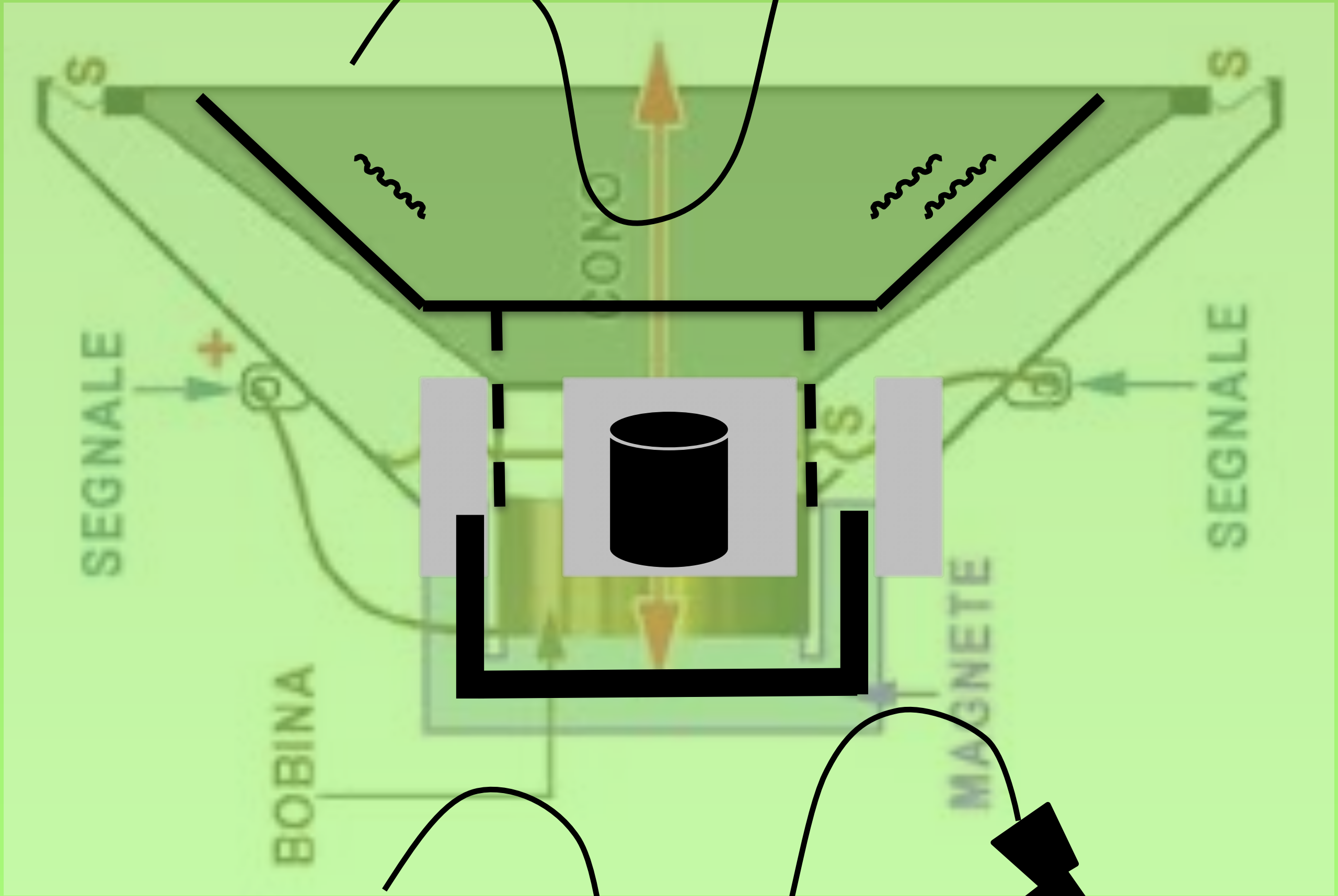


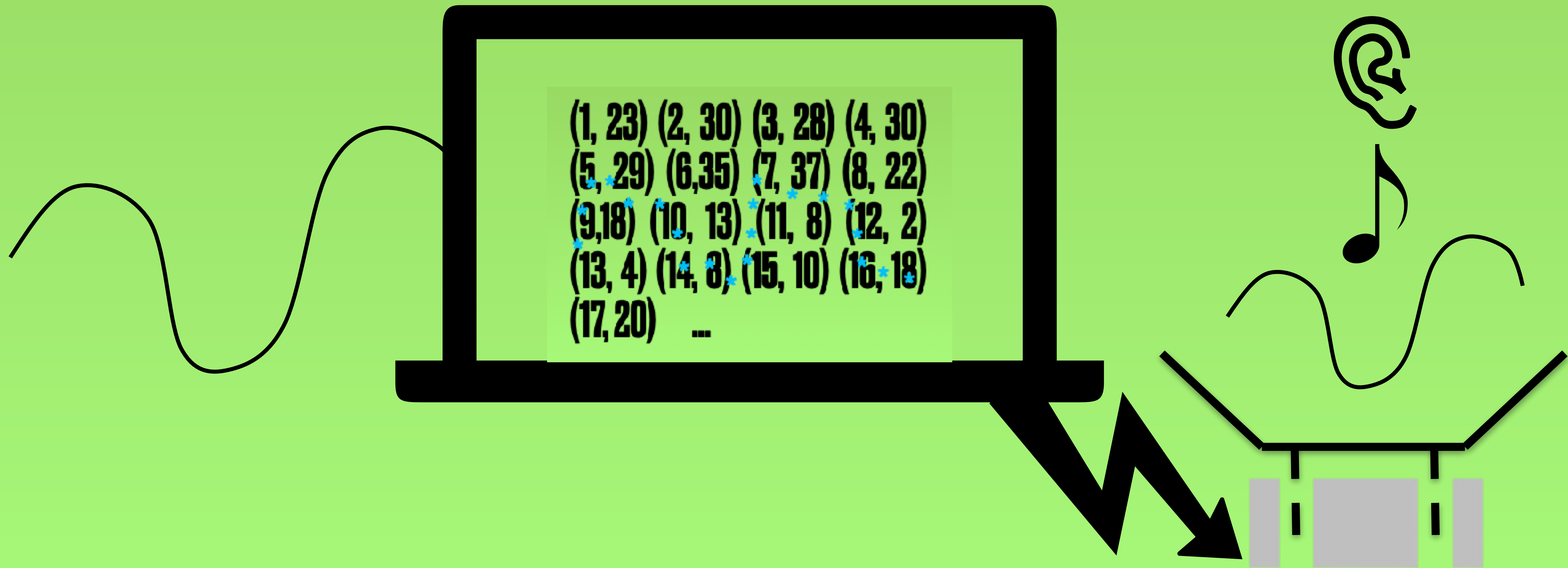
HANDWERK



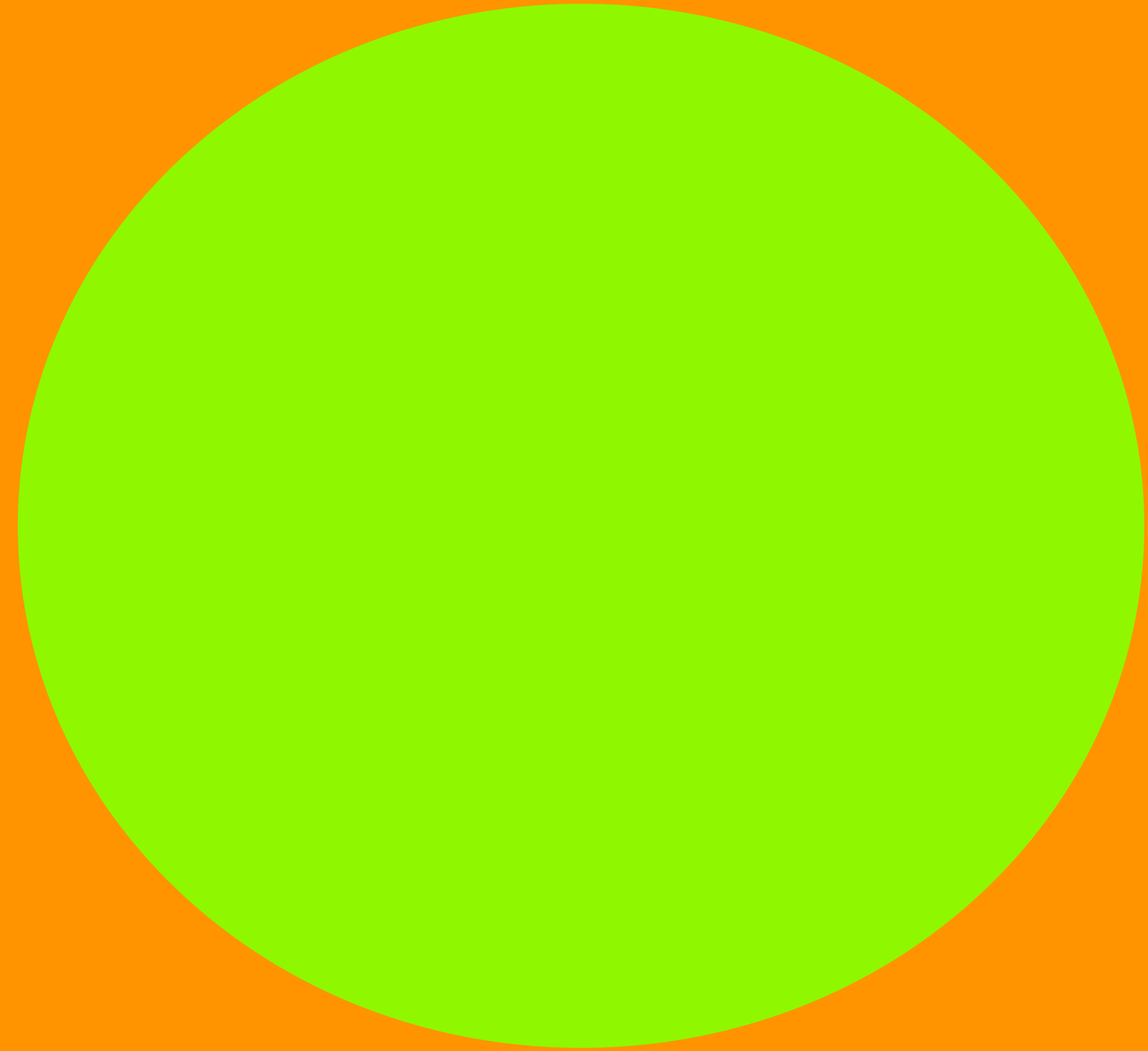














Riproduci (k)

FANTASIA

J. ALGAR, S. AMSTRONG, F. BEEBE, N. FERGUSON, J. HANDLEY, W. JACKSON, T. HEE, H. LUSKE, B. ROBERTS, P. SUTTERFIELD (registi),

W. DISNEY, B. SCHARPSTEEN (produttorie)

Leopold Stokowsky, Philadelphia Symphony Orchestra

1940

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=NTM48PWOXAO](https://www.youtube.com/watch?v=NTM48PWOXAO)





LE GRAND
ORCHESTRE
DES
ANIMAUX

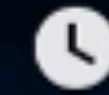
THE GREAT ANIMAL
ORCHESTRA
Paris, Fondation Cartier,
2016

[HTTPS://VIMEO.COM/364836175](https://vimeo.com/364836175)





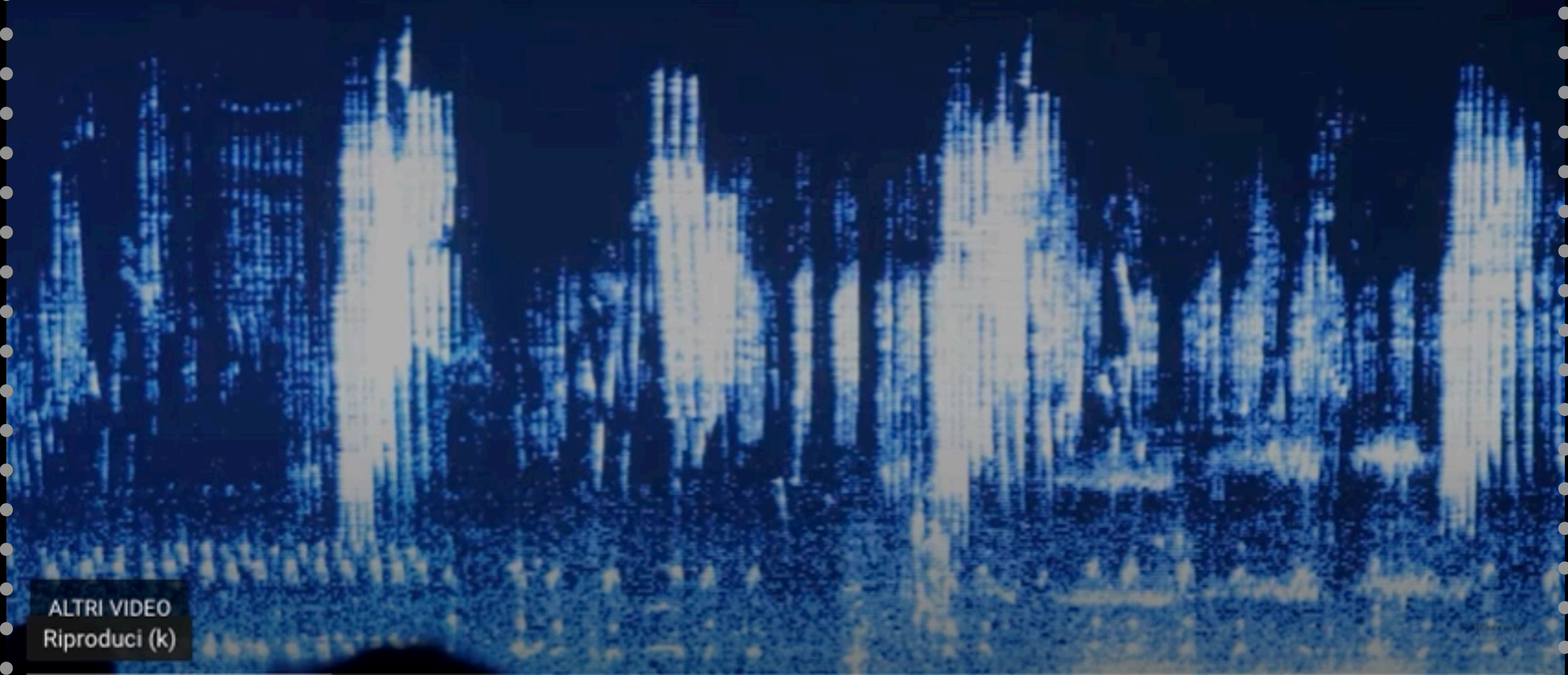
Entretien avec Bernie Krause - Le Grand Orchestre des Animaux - 2016



Guarda più...



Condividi



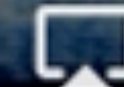
ALTRI VIDEO
Riproduci (k)



0:00 / 6:31



YouTube



THE GREAT ANIMAL
ORCHESTRA
Paris, Fondation Cartier,
2016

[HTTPS://VIMEO.COM/364836175](https://vimeo.com/364836175)





View of the exhibition *The Great Animal Orchestra*, Fondation Cartier pour l'art contemporain, Paris, 2016. © Bernie Krause / © UVA. Photo © Luc Boegly.



THE GREAT ANIMAL
ORCHESTRA
Paris, Fondation Cartier,
2016

[HTTPS://VIMEO.COM/364836175](https://vimeo.com/364836175)





QUANTITA' VS QUALITA'

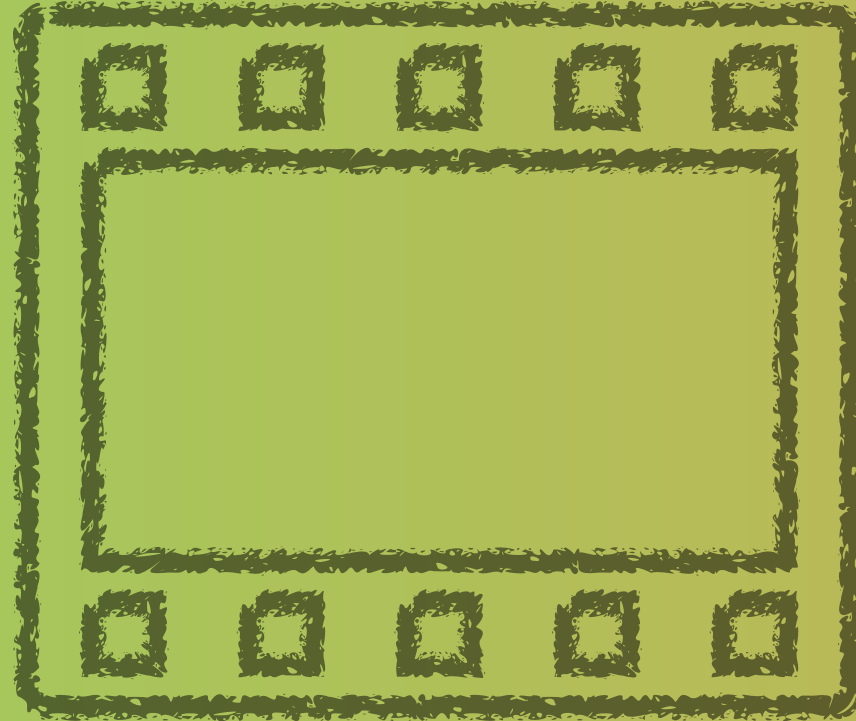
**PER RICORDARE,
ARCHIVIARE, SERVE
MEMORIA**

DIGITAL HUMANITIES



UNIVERSITÀ DEGLI STUDI DI BERGAMO

RIASSUMENDO



- 1 DEFINIZIONE
- 2 STORIA E METODO

- 3 FONDAMENTI MATEMATICI . NUMERO
- 4 FONDAMENTI INFORMATICI . CODIFICA
- 5 FONDAMENTI FISICI . CIRCUITO

I TESTI

- 6 LE DH APPLICATE A TESTI E DOCUMENTI
- 7 PROBLEMI DI METODO
- 8 CONVERGENZE DISCIPLINARI: IL TESTO

GLI OGGETTI

- 9 LA CODIFICA DELLE IMMAGINI DIGITALI
- 10 LO STATUTO DELLE IMMAGINI DIGITALI
- 11 LE DH APPLICATE ALLE IMMAGINI

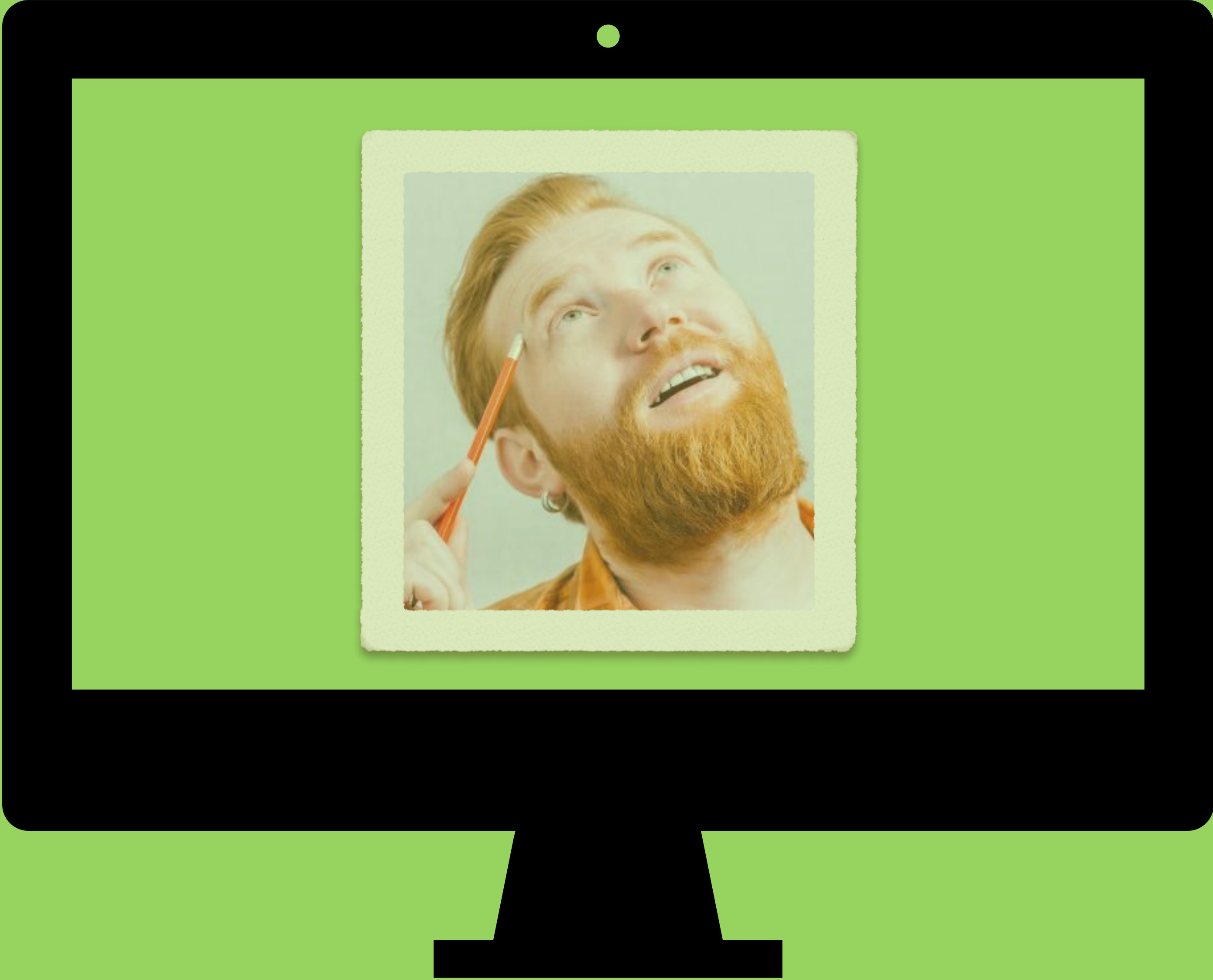
I SUONI

- 12 LA CODIFICA DEI SUONI DIGITALI
- 13 NARRAZIONI MULTIMEDIALI E MEMORIA

- 14 ASPETTI GESTIONALI
- 15 DH VISIONI

MEMORIA







“LA MEMORIA INTEGRA TRA DI LORO PROCESSI MOLTO DIFFERENZIATI CHE CONTRIBUISCONO, CONGIUNTAMENTE, A FORMARE UNA TRAMA CONNETTIVA -PER MOLTI ASPETTI ANCORA INESPLORATA - TRA PERCEZIONE, IMMAGINAZIONE E PENSIERO.

DEFINIAMO DUNQUE PROVVISORIAMENTE LA MEMORIA COME LA CAPACITÀ DELLA MENTE DI RECUPERARE INFORMAZIONI CON CUI È VENUTA IN CONTATTO IN PASSATO, NON PIÙ PRESENTI ALLA SUA PERCEZIONE.

DA UN LATO, ESSA È LA RIATTUALIZZAZIONE DI UN'ESPERIENZA PASSATA. IN QUANTO TALE, È VALUTABILE IN TERMINI DI FEDELTÀ E DI ACCURATEZZA.... D'ALTRO CANTO, L'INFORMAZIONE NON È PIÙ PRESENTE NEL CAMPO PERCETTIVO ATTUALE, E QUINDI LA MEMORIA È UN'ATTIVITÀ DI RICOSTRUZIONE DI ELEMENTI ASSENTI. IN QUANTO TALE È VALUTABILE PER LA SUA CAPACITÀ DI COGLIERE GLI ASPETTI ESSENZIALI, IL SUCCO, DI QUELLO CHE STA CERCANDO DI RICREARE.”

RI

TEMPO

RI - ATTUALIZZAZIONE

PERCEZIONE

EVENTO

DESCRIZIONE EVENTO

PERSONA CHE RI .CORDA



PERSONA - PERSONE





IL POETA SIMONIDE DI CEO

MNEMOSYNE





Jeff Wall, Raffica di vento



Memoria

10000 ANNI

MEMORIA DIGITALE

Memorie digitali



USB key



Solid State Disk



RAM



CD/DVD



Magnetic Hard Disk



SD card

56789012345678345678

90123456456789012345

01101010

67567890123456786789

01234567890123456789

Memoria

0000

01101010

0001

11001110

0010

11011011

0011

10001011

0000

0 1 1 0 1 0 1 0

Operandi

0001

1 1 0 0 1 1 1 0

0010

1 1 0 1 1 0 1 1

0011

1 0 0 0 1 0 1 1

Operatori

0000

0 1 1 0 1 0 1 0

0001

1 1 0 0 1 1 1 0

0010

1 1 0 1 1 0 1 1

0011

1 0 0 0 1 0 1 1

Indirizzi

0000

01101010

0001

11001110

0010

11011011

0011

10001011

0000

0 1 1 0 1 0 1 0

Operandi

0001

1 1 0 0 1 1 1 0

0010

1 1 0 1 1 0 1 1

0011

1 1 0 0 0 1 0 1
il computer
«ricorda» i dati

Operatori

0000

0 1 1 0 1 0 1 0

0001

1 1 0 0 1 1 1 0

0010

1 1 0 1 1 0 1 1

0011

1 1 0 0 1 0 1 1

**il computer
«ricorda» cosa
fare con i dati**

Indirizzi

0000

01101010

0001

11001110

0010

11011011

0011

10001001

il computer
«ricorda» dove
trovare i dati

FIND AND REPLACE

computer

Find

digit cruncher

Replace All Replace

MATCHES: Result 1 of 14

When some 50 years ago **computer** science started to become a stand-alone discipline, independent from mathematics and physics from which it had originated in the first half of the 20th century, the question of defining its epistemological status emerged as well, because this discipline was and still is heavily dependent on mathematical, empirical, and engineering methods (Tedre 2015, Primiero 2020). A debate is still happening on whether to see **computer** science as a mathematical discipline, as a special kind of engineering, or as a scientific discipline (Angius et al. 2021).

The debate on **computer** science as a scientific discipline is part of a larger discussion regarding the intersection between **computer** science and science, which can be addressed from a conceptual and methodological perspective along two different directions of knowledge flow. In the analysis of **computer** science as a science, the flow goes from science to **computer** science, with a particular focus on how the experimental scientific method can inform **computer** scientists so that they can make their methodologies more precise and rigorous from the point of view of traditional science. Recommendations for code sharing to increase repeatability of experiments in **computer** science are an example of this kind of effort (Collberg and Proebsting 2016). In the other direction of knowledge flow, **computer** science is intended as “infra-science”, that is, a tool for scientific disciplines in terms of technological support provided to traditional methodologies of scientific discovery and knowledge creation (Amigoni and Schiaffonati 2014). The applications of computational techniques to scientific disciplines are numerous and varied, but one case in particular, namely Machine Learning (ML) in Radiology, is interesting from an epistemological perspective.

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(eds.). 2014. Methods and Experimental Techniques in and Raymond Turner. 2021. “The Philosophy of **Computer** Science”, Edward N. Zalta (ed.), <https://plato.stanford.edu/archives/spr2021/>
Todd A. Proebsting. 2016. “Repeatability in **computer** systems

Epistemology of Neural Networks in Medical Image Analysis

When some 50 years ago **computer** science started to become a stand-alone discipline, independent from mathematics and physics from which it had originated in the first half of the 20th century, the question of defining its epistemological status emerged as well, because this discipline was and still is heavily dependent on mathematical, empirical, and engineering methods (Tedre 2015, Primiero 2020). A debate is still happening on whether to see **computer** science as a mathematical discipline, as a special kind of engineering, or as a scientific discipline (Angius et al. 2021).

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**APRI QUEL FILE,
TROVA E SOSTITUISCI
OGNI OCCORRENZA DI
"COMPUTER" CON
"MACINA NUMERI".**

OPERANDI/DATI

APRI QUEL **FILE**,
TROVA E SOSTITUISCI
OGNI OCCORRENZA DI
"**COMPUTER**" CON
"**MACINA NUMERI**".

OPERATORI \ ISTRUZIONI

APRI QUEL FILE,
TROVA E SOSTITUISCI
OGNI OCCORRENZA DI
"COMPUTER" CON
"MACINA NUMERI".

INDIRIZZI \ RIFERIMENTI

**APRI QUEL FILE,
TROVA E SOSTITUISCI
OGNI OCCORRENZA DI
"COMPUTER" CON
"MACINA NUMERI".**

0000

01101010

0001

11001110

0010

11011011

0011

10001011

**APRI QUEL FILE,
TROVA E SOSTITUISCI
OGNI OCCORRENZA DI
"COMPUTER" CON
"MACINA NUMERI".**

■1. Vi alla primo carattere all'inizio del file.

■2. Se quel carattere inizia con una sequenza che forma la parola "computer", sostituisci quella sequenza con "macina numeri", altrimenti lascia i caratteri così come sono.

■3. Passa al carattere successivo.

■4. Ripeti 2 e 3 fino alla fine del file.

■ **1. Vi alla primo carattere all'inizio del file.**

■ **2. Se quel carattere inizia con una sequenza che forma la parola "computer", sostituisci quella sequenza con "macina numeri", altrimenti lascia i caratteri così come sono.**

■ **3. Passa al carattere successivo.**

■ **4. Ripeti 2 e 3 fino alla fine del file.**

DA 10200
A 35704

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QUALE E' L'INDIRIZZO DEL FILE?

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Una memoria immagazzina dati.
Una memoria memorizza istruzioni.
Il sistema di indirizzi di una memoria permette la ripetizione, conosciuta anche come ITERAZIONE.

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1	0	0	0	1	0	1	1
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AUTOMAZIONE



■ **1. Vi alla primo carattere all'inizio del file.**

■ **2. Se quel carattere inizia con una sequenza che forma la parola "computer", sostituisci quella sequenza con "macina numeri", altrimenti lascia i caratteri così come sono.**

■ **3. Passa al carattere successivo.**

■ **4. Ripeti 2 e 3 fino alla fine del file.**



A grand, multi-story library with high vaulted ceilings, wooden bookshelves, and a central aisle with benches. The word "QUANTITA'" is overlaid in large white letters in the center.

QUANTITA'

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