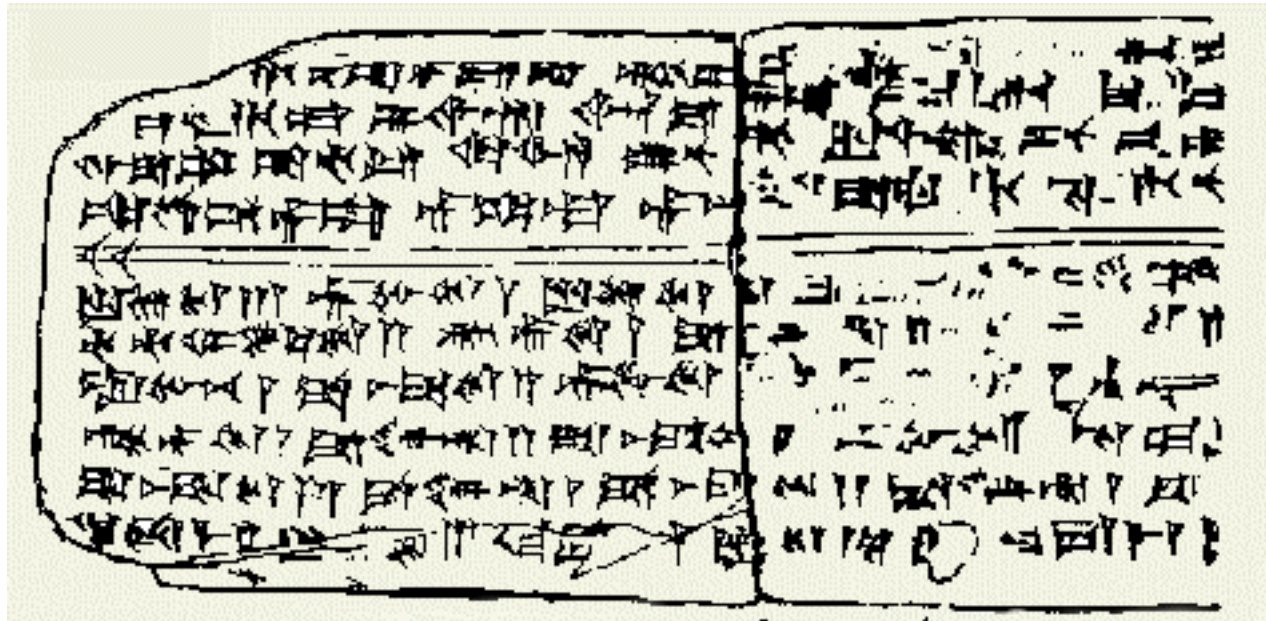


Communicating music

Music notation (historical)



Babylonia, ~1400 BC



Korean 15th century

Music notation

Goldberg Variations

BWV 988

Aria

Johann Sebastian Bach



Nashville number system

KEY OF A

WONDERIN'
(SECRETARIAT)

$\frac{6}{8}$ ♩ = 152

IN) 4 1 4 1
4 1 4 1

V1) $\diamond 5$ $\diamond 4$ $\frac{4}{1}$ 1
 $\diamond 5$ $\diamond 4$ $\frac{4}{1}$ 1

V2) 5 2- 6- 3-
4 4 $\diamond 5$ $\diamond 5$

LN) 4 1 4 1

V1) $\diamond 5$ $\diamond 4$ $\frac{4}{1}$ 1
 $\diamond 5$ $\diamond 4$ $\frac{4}{1}$ 1

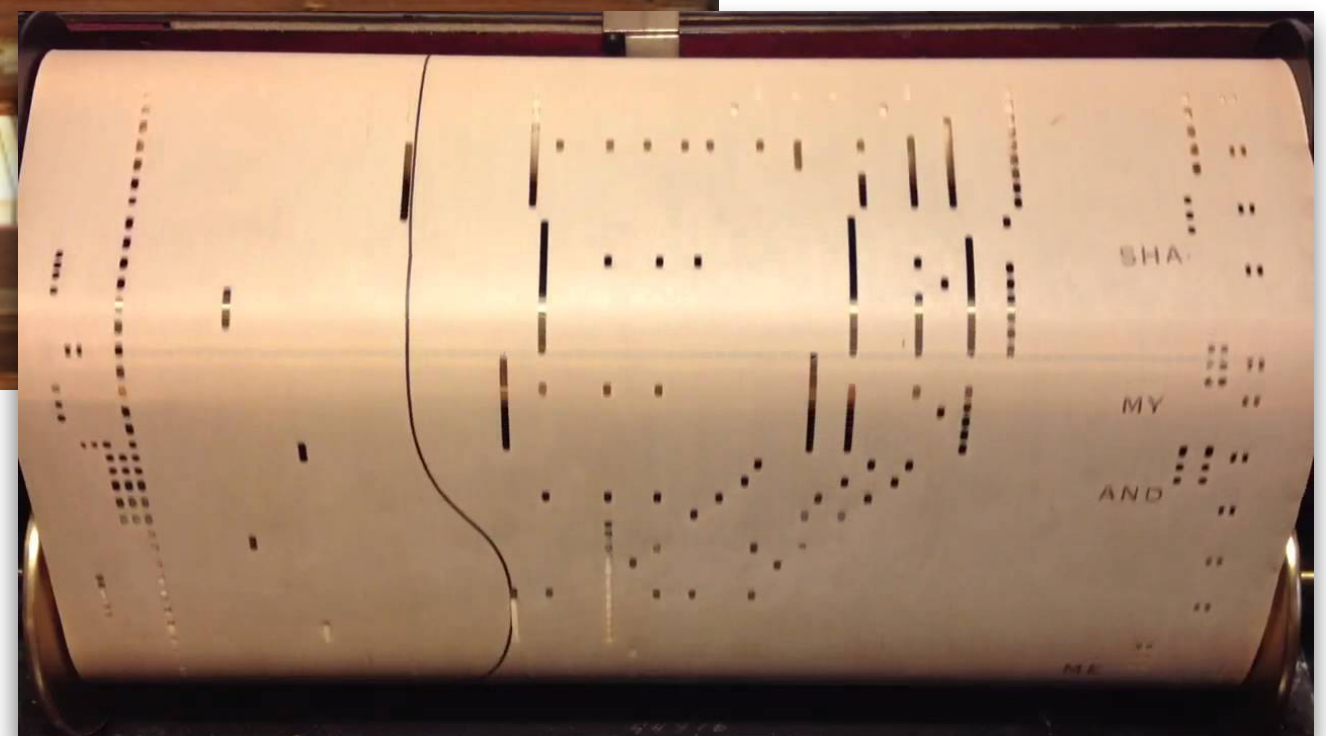
V2) 5 2- 6- 3-
4 4 5 $\frac{5}{6}$

BR) $\diamond b7$ $\diamond b7$ 4 4
 $6-^{11}$ $6-^{11}$ 5 $\frac{5}{6}$
 $\diamond b7$ $\diamond b7$ 4 4
 $6-^{11}$ $6-^{11}$ $\diamond 5$ $\diamond 5$

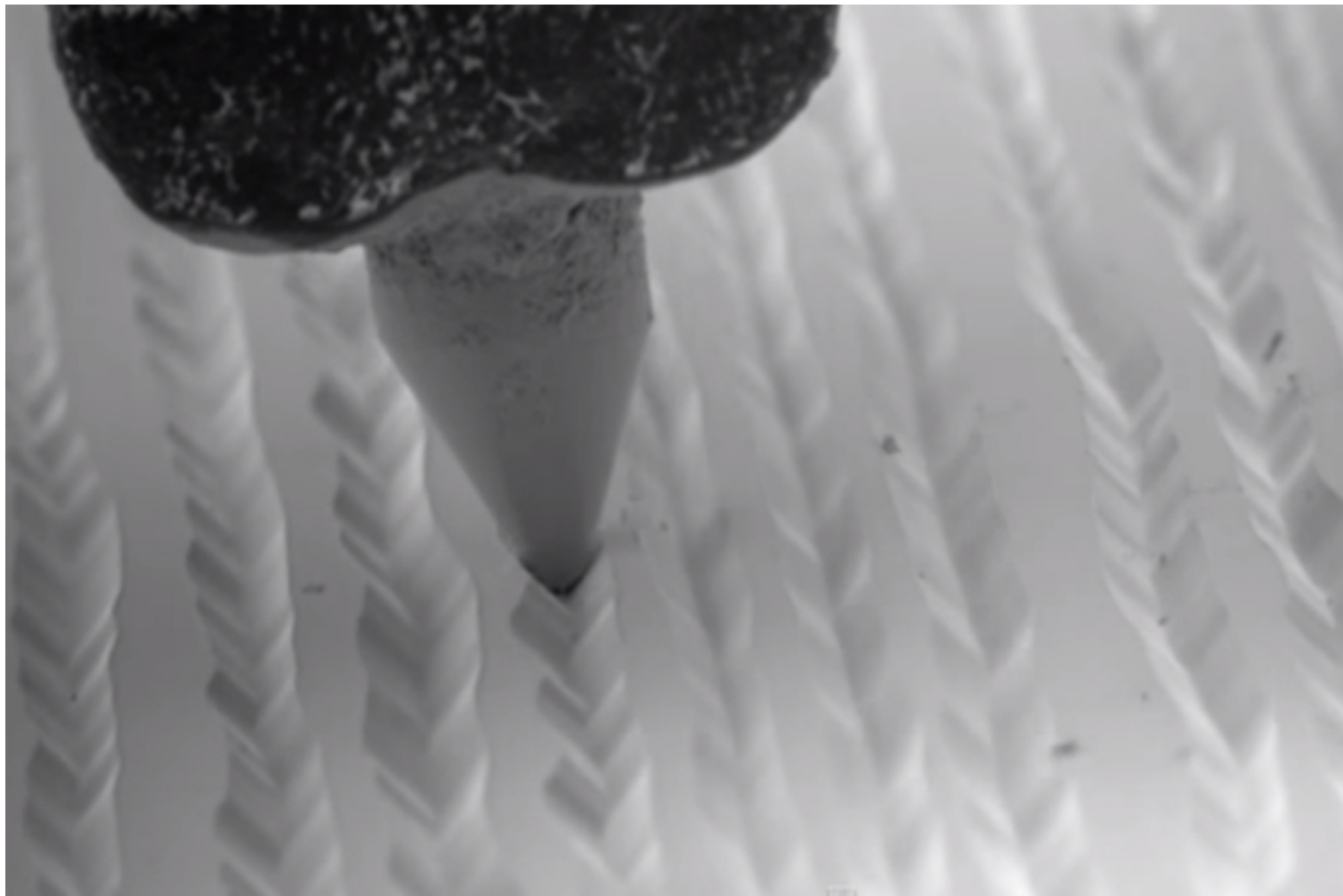
SO) 4 1 4 1
5 4 $\frac{4}{1}$ 1
5 4 $\frac{4}{1}$ 1

V2) 5 2- 6- 3-
4 4 5
4 4 5
4 4 5 5 $\frac{5}{6}$

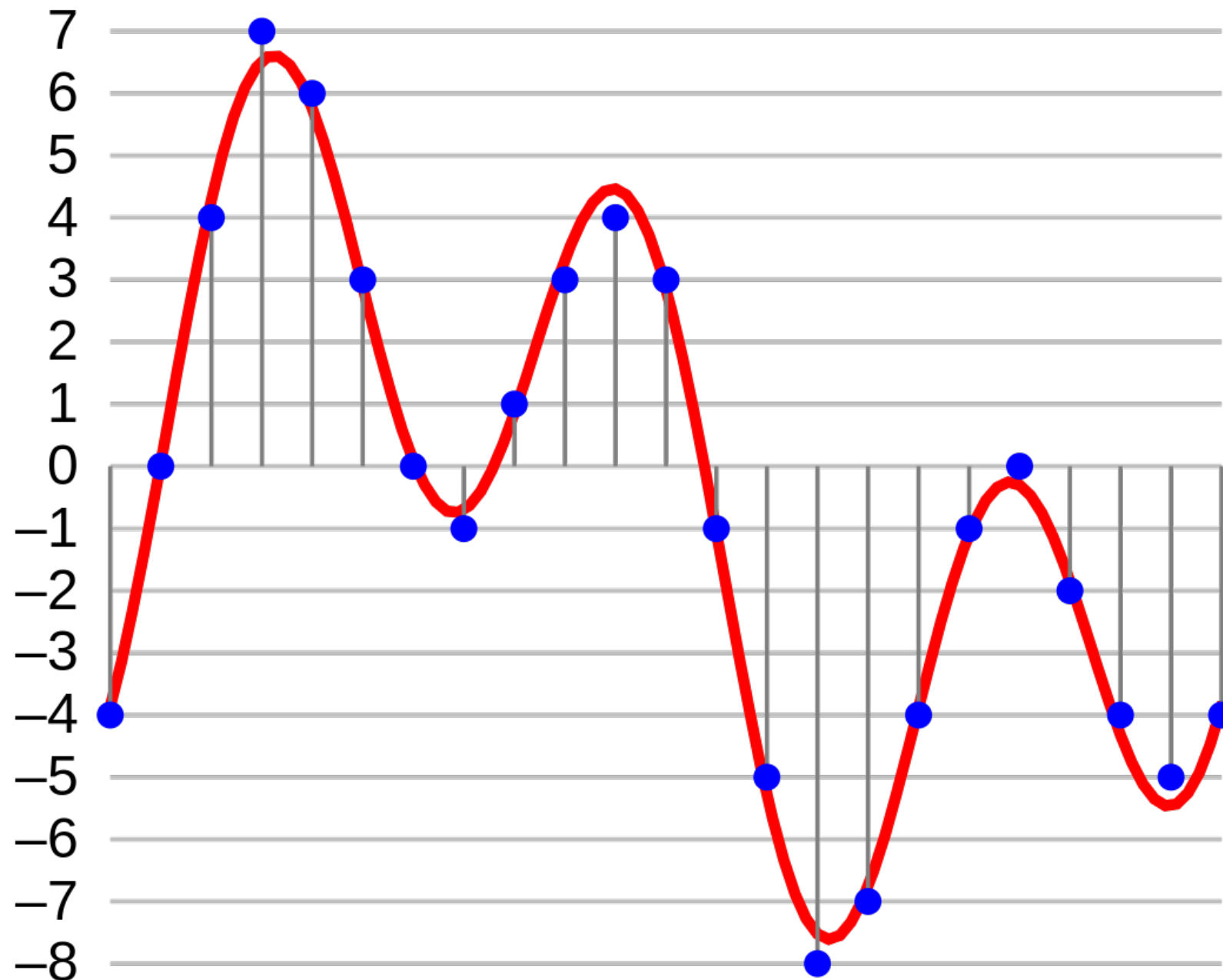
Player piano



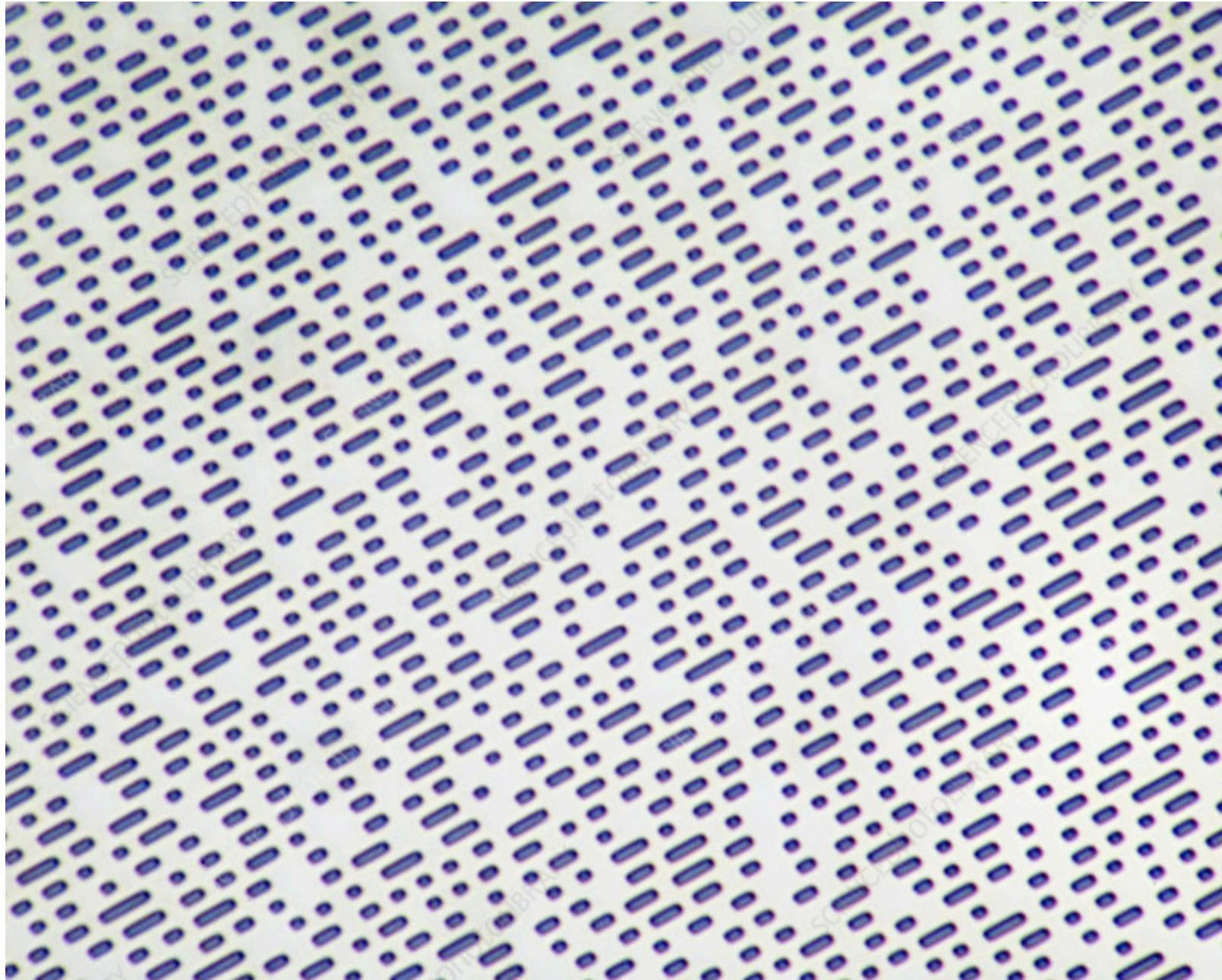
Records



Digitizing sound

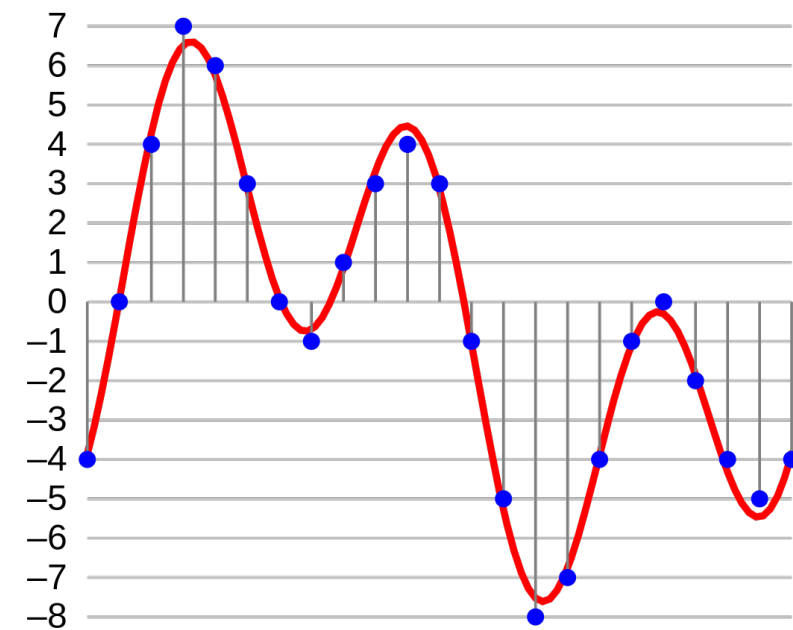
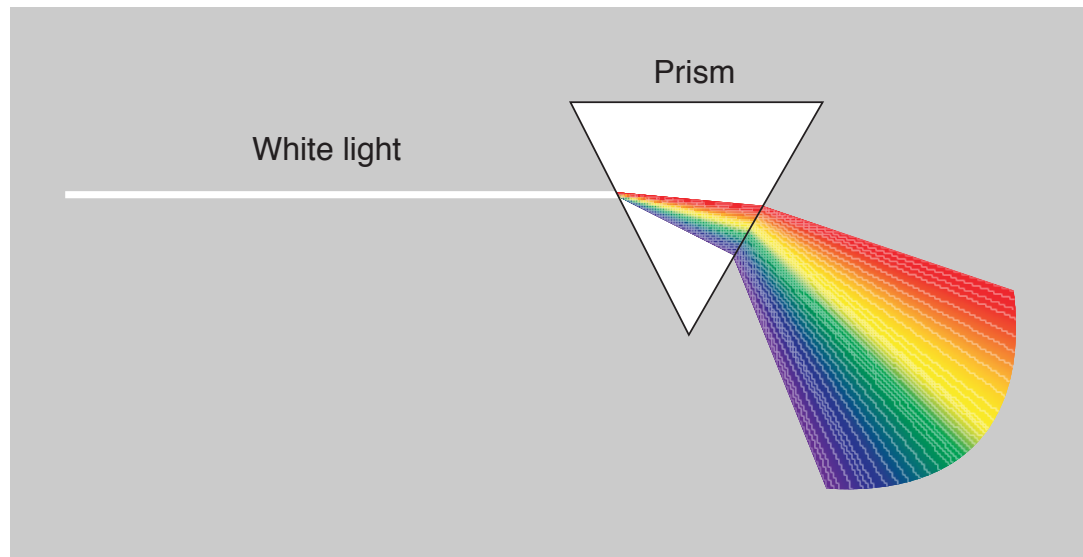


Compact Disks

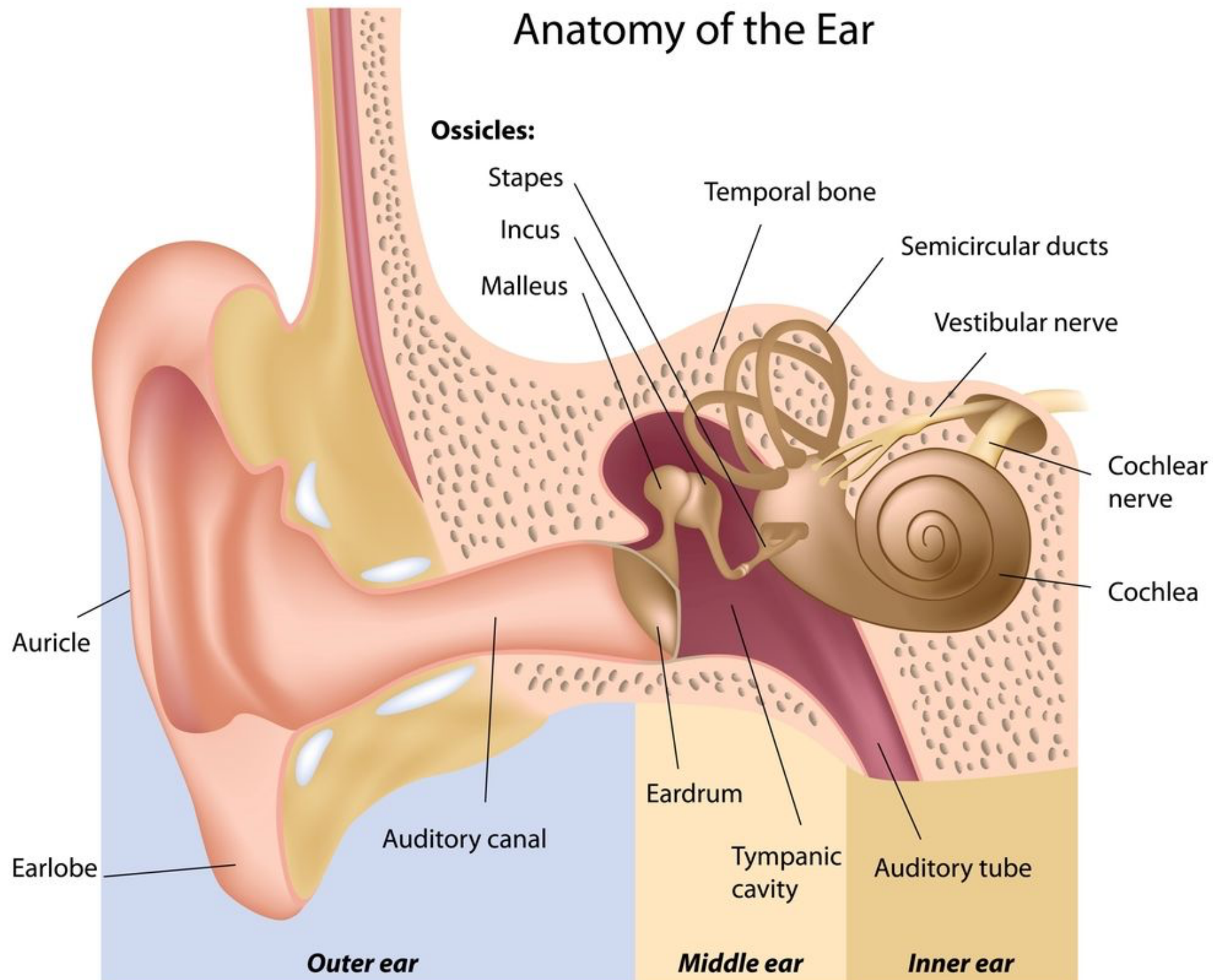


Notes vs. wave

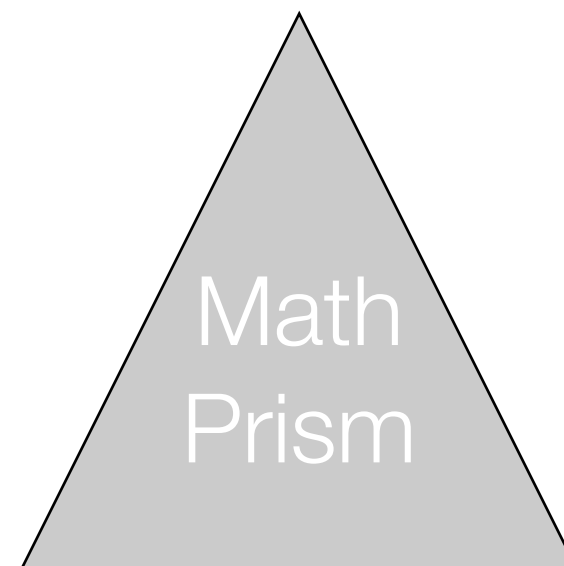
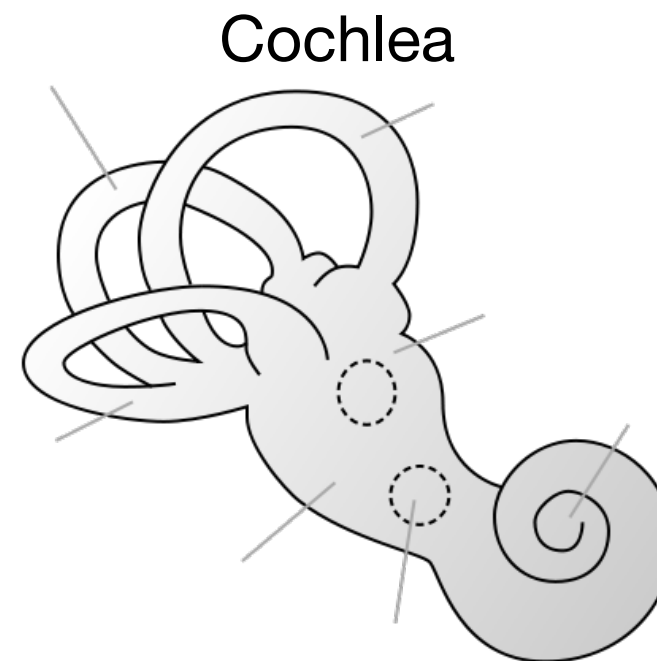
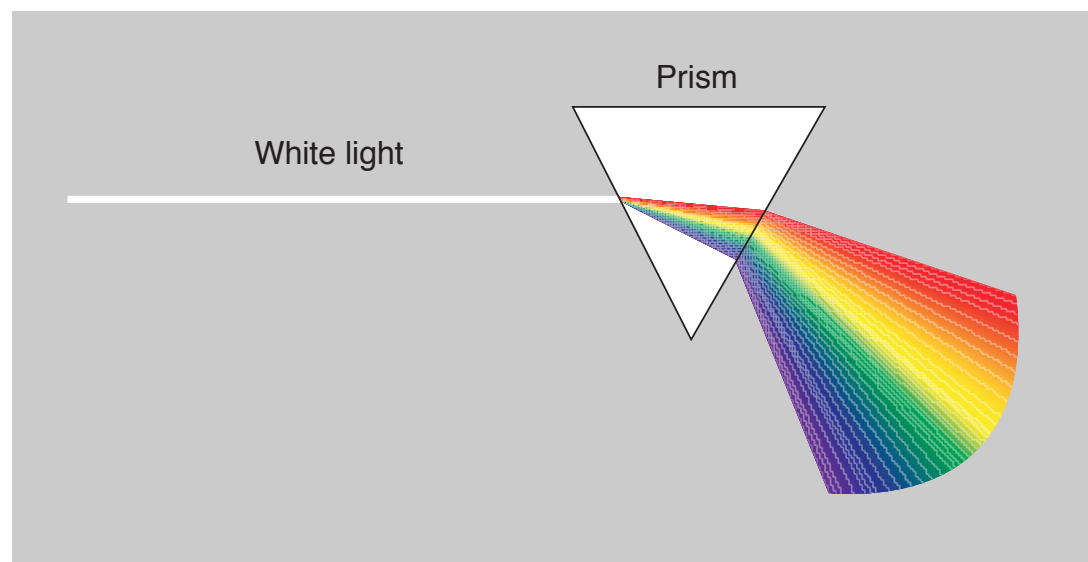
- Can represent as either amplitude vs. time or notes



Human ear

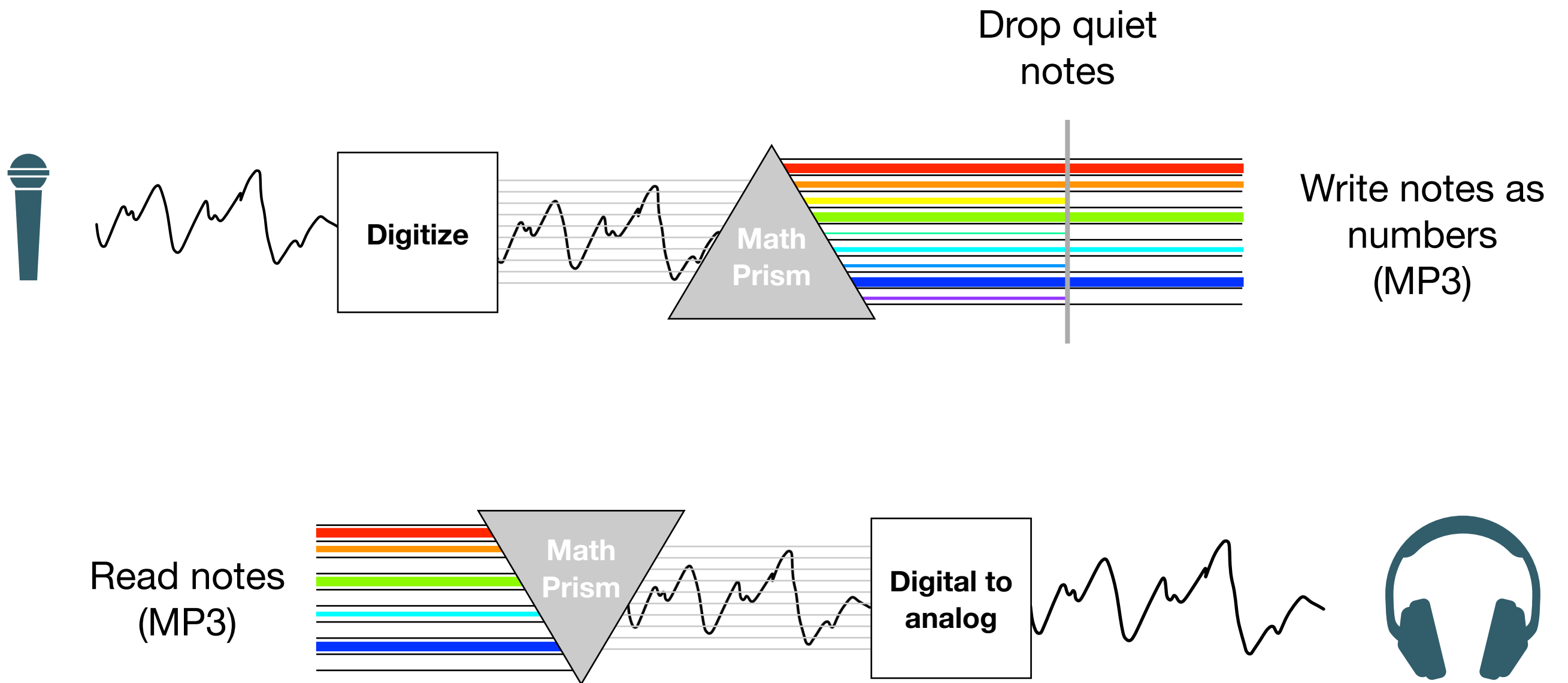


Splitting into notes (or colors)



(Fourier Transform)

MP3 compression



Compression

- Lossy compression is imperfect
- Requires lots of math (modern computing)