

▶ 00:01:52:20



Experiment 08:10 / 05:03:20 >

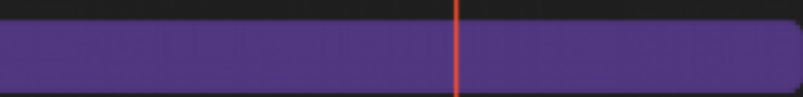
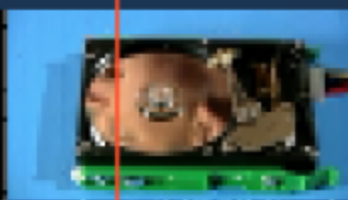
00:01:50:00

00:0

Ferromagnetic core



sc dur





Video Roles



Video Role

Titles

Titles

Video

Video

PICTURES

PICTURES

New Subrole

pictures subrole

PICTURES NOT TO GO

PICTURES NOT TO GO subrole

pictures not to go subrole2



Audio Roles



Audio Role

Dialogue

Effects

Music

Cancel

Apply

How...works

- Smart...tions
- All Video
- Audio Only
- Favorites
- Projects
- Stills

5-09-2019

Name

- Picture TH
- Picture TV
- Com és ur
- Screen Shi
- Screen Shi

1 of 24 selected, 10:00

Picture THREE

Picture THREE

Notes

Name	Picture THREE
Start	01:00:00:00
End	01:00:10:00
Duration	00:00:10:00
Reel	
Scene	
Take	
Camera Angle	
Camera Name	
Media Start	00:00:00:00

00:03:00:00 Extended Apply Custom Name

Index How a hard drive works Storyline 10:00 / 05:03:20

00:02:45:00 00:02:50:00 00:02:55:00 00:03:00:00 00:03:05:00 00:03:10:00 00:03:15:00 00:03:20:00 00:03

Slider

Picture THREE

Globesatoy

Com és un disc dur

Timeline with video clips of people at a table





00:00:00:00 | 00:00:30:00 | 00:01:00:00 | 00:01:30:00 | 00:02:00:00 | 00:02:30:00 | 00:03:00:00 | 00:03:30:00 | 00:04:00:00 | 00:04:30:00



Com és un disc dur



Com és un disc dur



Atmosphere

Clouds





Video Roles

+ Video Role

Titles

Titles

Video

Video

PICTURES

PICTURES

New Subrole

pictures subrole

- PICTURES NOT TO GO

+ Subrole



HIDE

PICTURES NOT TO GO subrole

pictures not to go subrole2



Audio Roles

+ Audio Role

Dialogue

Effects

Music

Cancel

Apply

Camera Name

Media Start

00:00:00

00:03:00:00

Extended

App

How a har

New Compound Clip...

⌘G

Open Clip

⌘P

Change Duration...

⌘D

Rename Clip

Disable

V

Assign Audio Roles

▶

Assign Video Roles

▶

Expand Audio

⌘S

Expand Audio Components

⌘⌘S

Show Video Animation

⌘V

Show Audio Animation

⌘A

Lift from Storyline

⌘⌘↑

Reveal in Browser

⌘F

00:03:15:00

00:03:20:00

Picture THREE

Picture THREE

Picture THREE

Picture THREE

Globeasatoy



Titles

⌘⌘T

Video

⌘⌘V

PICTURES

PICTURES

New Subrole

✓ pictures subrole

PICTURES NOT TO GO

PICTURES NOT TO GO subrole

pictures not to go subrole2

Edit Roles...

▶ 00:01:52:20



Experiment 08:10 / 05:03:20 >

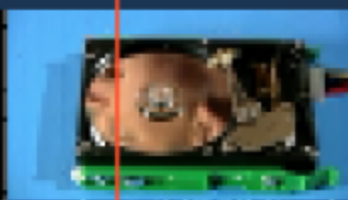
00:01:50:00

00:0

Ferromagnetic core



sc dur



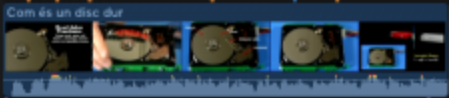
Index



How a hard drive works 05:03:20



00:00:00-00 | 00:00:30-00 | 00:01:00-00 | 00:01:30-00 | 00:02:00-00 | 00:02:30-00 | 00:03:00-00 | 00:03:30-00 | 00:04:00-00 | 00:04:30-00 | 00:05:00-00



Atmosfera

Clouds







Video Roles



Video Role

Titles

Titles

Video

Video

PICTURES

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New Subrole

pictures subrole

PICTURES NOT TO GO

PICTURES NOT TO GO subrole

pictures not to go subrole2



Audio Roles



Audio Role

Dialogue

Effects

Music

Cancel

Apply

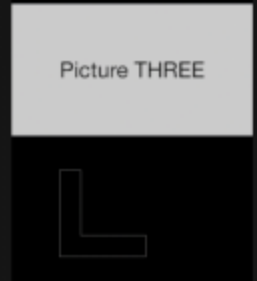
How...works

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5-09-2019

Picture THREE

- Name
- Picture TH
 - Picture TV
 - Com és ur
 - Screen Shi
 - Screen Shi
- 1 of 24 selected, 10:00



Picture THREE 00:00 10:00

1980 x 1080 | 25p
Last Modified 5 September 2019 at 17:55

Notes	
Name	Picture THREE
Start	01:00:00:00
End	01:00:10:00
Duration	00:00:10:00
Reel	
Scene	
Take	
Camera Angle	
Camera Name	
Media Start	00:00:00:00

00:03:00:00 Extended Apply Custom Name

Index How a hard drive works Storyline 10:00 / 05:03:20

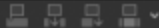
00:02:45:00 00:02:50:00 00:02:55:00 00:03:00:00 00:03:05:00 00:03:10:00 00:03:15:00 00:03:20:00 00:03

Slider

Picture THREE

Com és un disc dur

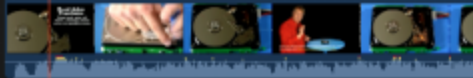
Globesatoy



00:00:00:00 | 00:00:30:00 | 00:01:00:00 | 00:01:30:00 | 00:02:00:00 | 00:02:30:00 | 00:03:00:00 | 00:03:30:00 | 00:04:00:00 | 00:04:30:00



Com és un disc dur



Com és un disc dur



Atmosphere

Clouds







Video Roles

+ Video Role

Titles

Titles

Video

Video

PICTURES

PICTURES

New Subrole

pictures subrole

- PICTURES NOT TO GO

+ Subrole



HIDE

PICTURES NOT TO GO subrole

pictures not to go subrole2



Audio Roles

+ Audio Role

Dialogue

Effects

Music

Cancel

Apply

Camera Name

Media Start

00:00:00

00:03:00:00

Extended

App

How a har

New Compound Clip...

⌘G

Open Clip

⌘P

Change Duration...

⌘D

Rename Clip

Disable

V

Assign Audio Roles

▶

Assign Video Roles

▶

Expand Audio

⌘S

Expand Audio Components

⌘⌘S

Show Video Animation

⌘V

Show Audio Animation

⌘A

Lift from Storyline

⌘⌘↑

Reveal in Browser

⌘F

00:03:15:00

00:03:20:00

Picture THREE

Picture THREE

Picture THREE

Picture THREE

Globeasatoy



Titles

⌘⌘T

Video

⌘⌘V

PICTURES

PICTURES

New Subrole

✓ pictures subrole

PICTURES NOT TO GO

PICTURES NOT TO GO subrole

pictures not to go subrole2

Edit Roles...

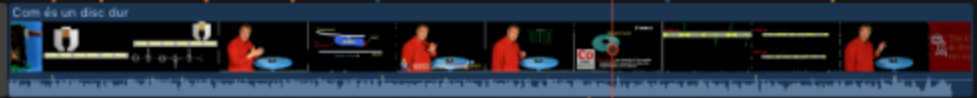
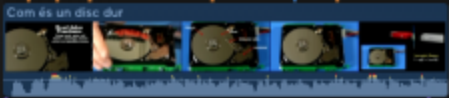
Index



How a hard drive works 05:03:20



00:00:00-00 | 00:00:30-00 | 00:01:00-00 | 00:01:30-00 | 00:02:00-00 | 00:02:30-00 | 00:03:00-00 | 00:03:30-00 | 00:04:00-00 | 00:04:30-00 | 00:05:00-00



Atmosfera

Clouds





Hard drive Teardown

flying heads, voice coil
motors, amazingly smooth
surfaces & signal processing

series 3 | [engineerguy](#) videos

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& HENRY DREYFUS
FOUNDATION, INC.



Bill Hammack

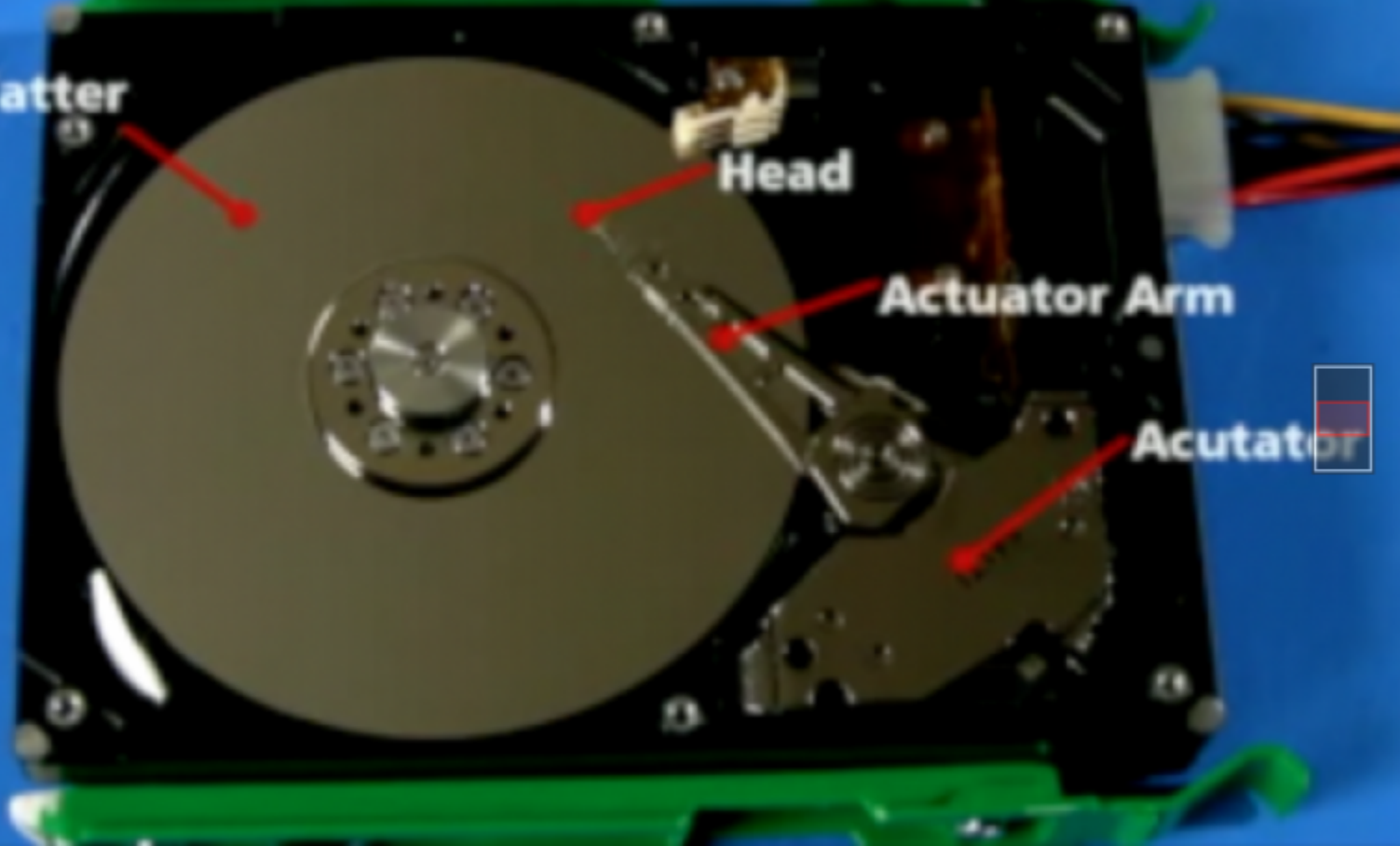
Department of Chemical
& Biomolecular Engineering
University of Illinois - Urbana

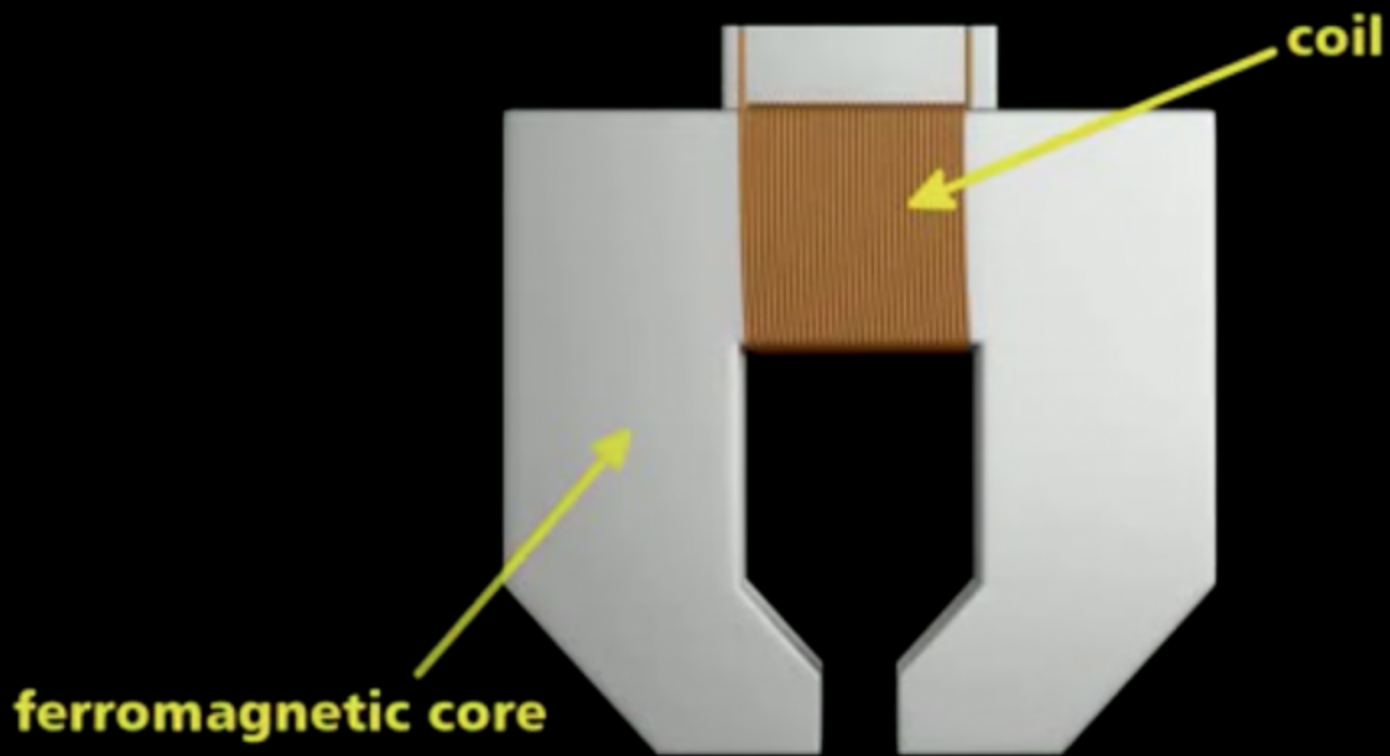
Platter

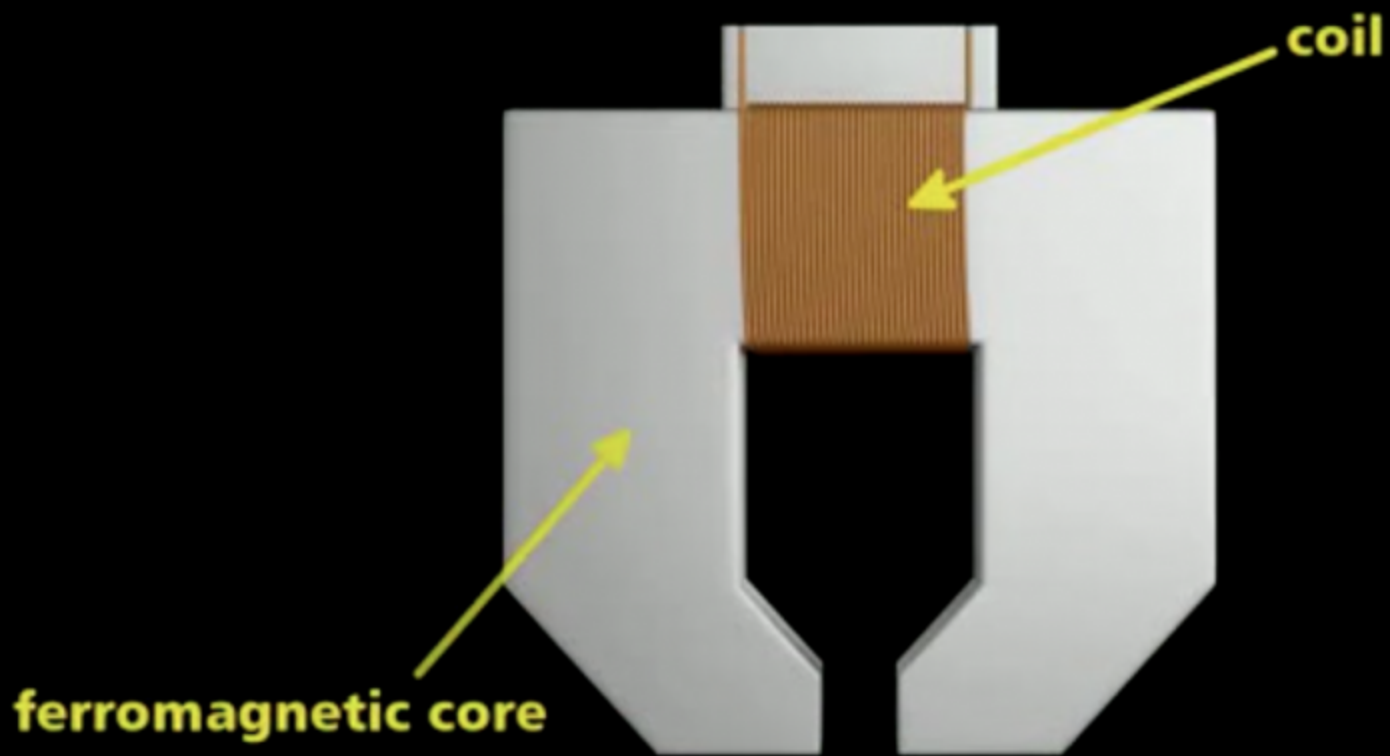
Head

Actuator Arm

Actuator









Faraday's Law The EMF (electromotive force) generated is proportional to the rate of change of the magnetic flux



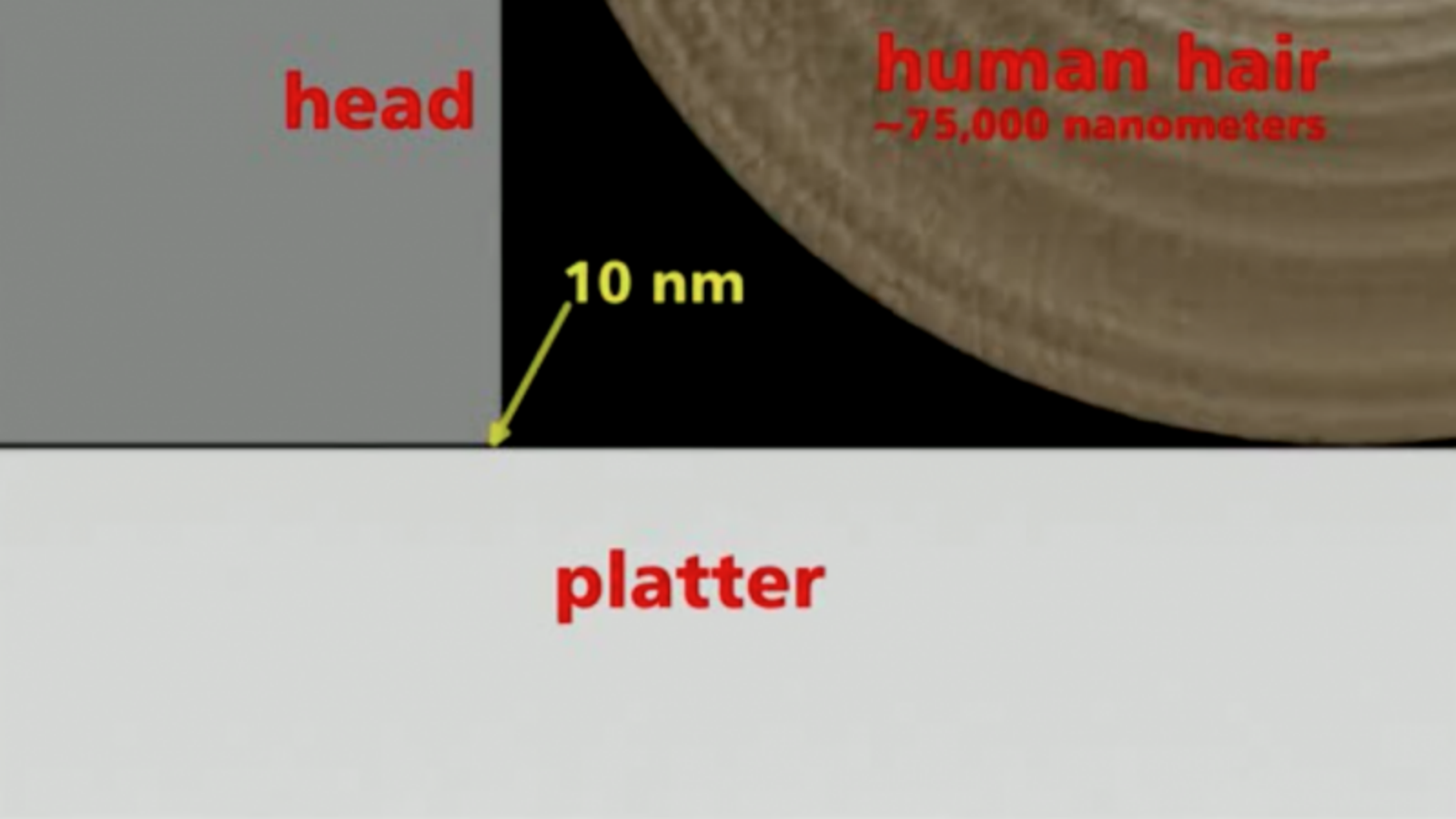
Faraday's Law The EMF (electromotive force) generated is proportional to the rate of change of the magnetic flux

head

human hair
~75,000 nanometers

10 nm

platter

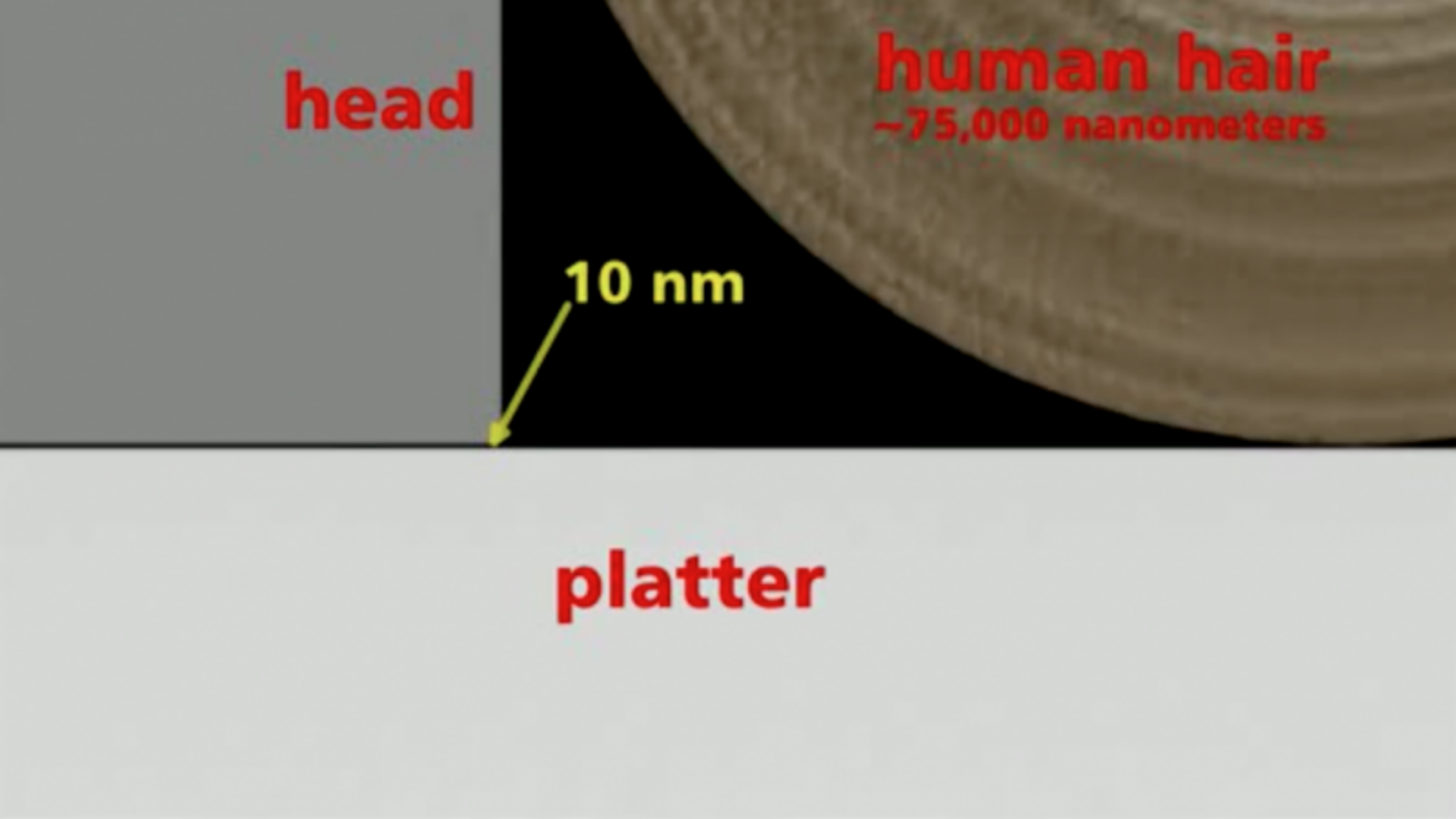


head

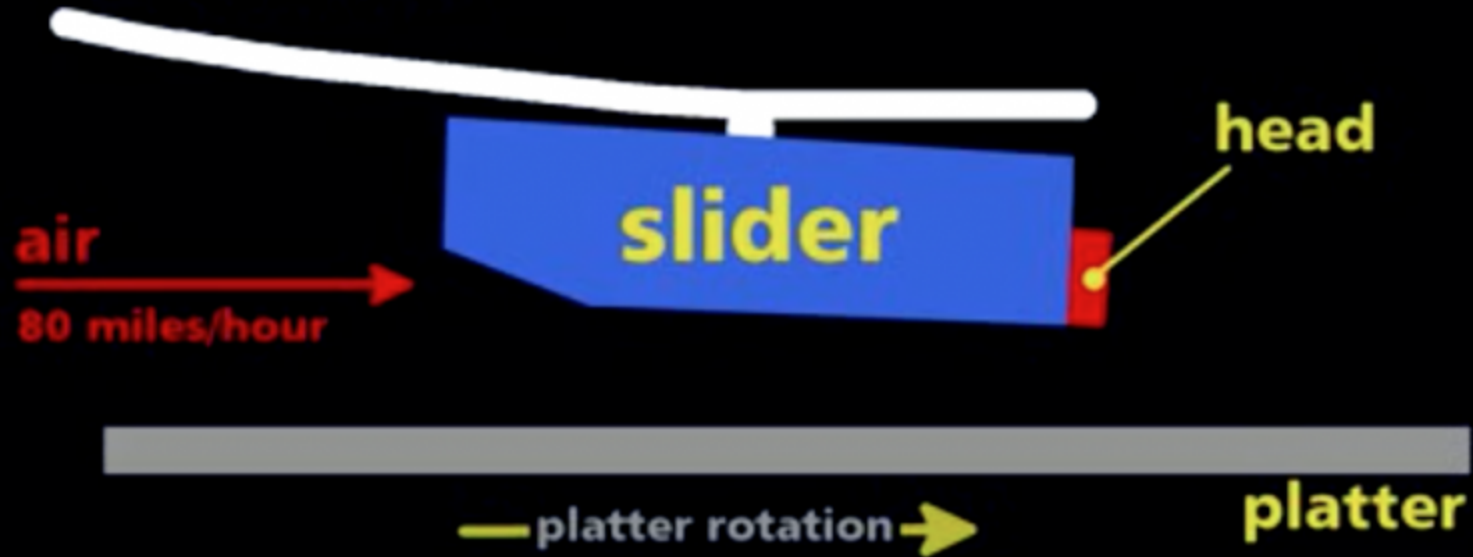
human hair
~75,000 nanometers

10 nm

platter



Suspension



head

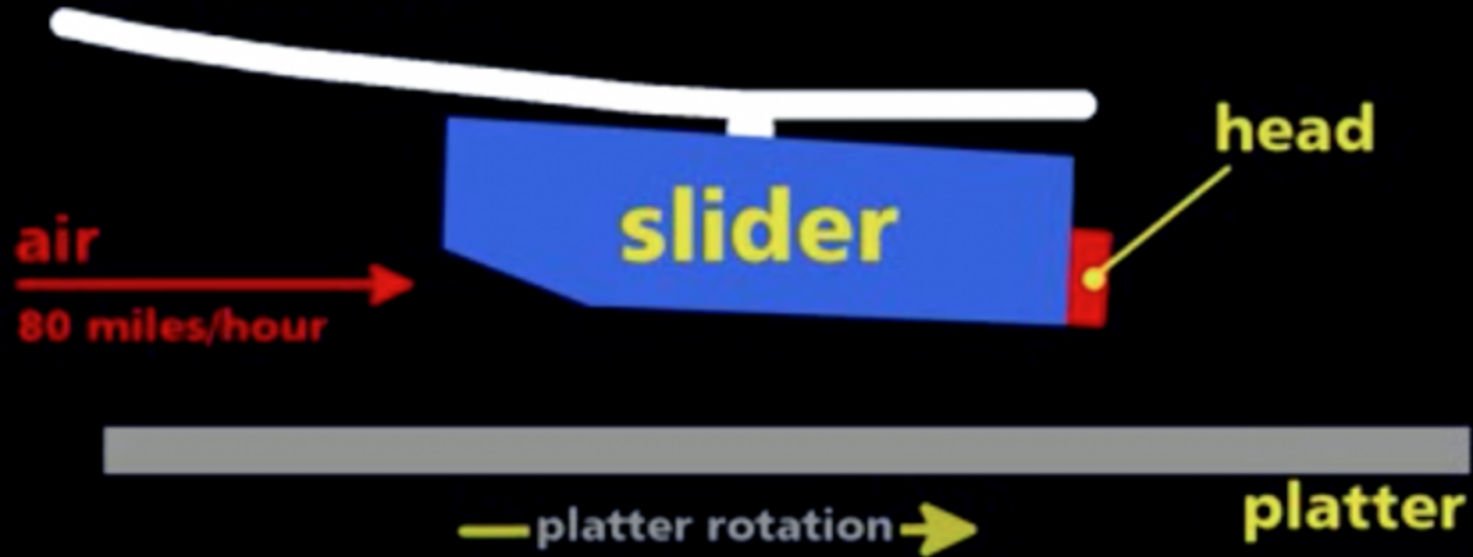
slider

air
80 miles/hour

platter rotation

platter

Suspension



head

slider

air
80 miles/hour

platter rotation

platter

Carbon Overcoat

tough layer with lubricant
to reduce wear

Magnetic Layer

Chromium

Aluminium

low density, rigid,
& low cost

Cobalt with platinum & nickel

Sputtered onto chromium, which provides
grained surface that is replicated in magnetic
layer, which helps reduce signal noise

Platter

A diagram of a hard drive platter, which is a thin, circular disk. It is shown as a stack of four overlapping layers, each represented by a different colored disk with a central hole. From left to right, the layers are: a brownish-gold disk (Carbon Overcoat), a teal disk (Magnetic Layer), a purple disk (Chromium), and a light blue/white disk (Aluminium). The layers are arranged in a slightly overlapping, staggered fashion. A red arrow points from the text 'Cobalt with platinum & nickel' to the teal Magnetic Layer. The word 'Platter' is written in large white letters at the top right.

Carbon Overcoat

tough layer with lubricant
to reduce wear

Magnetic Layer

Chromium

Aluminium

low density, rigid,
& low cost

Cobalt with platinum & nickel

Sputtered onto chromium, which provides
grained surface that is replicated in magnetic
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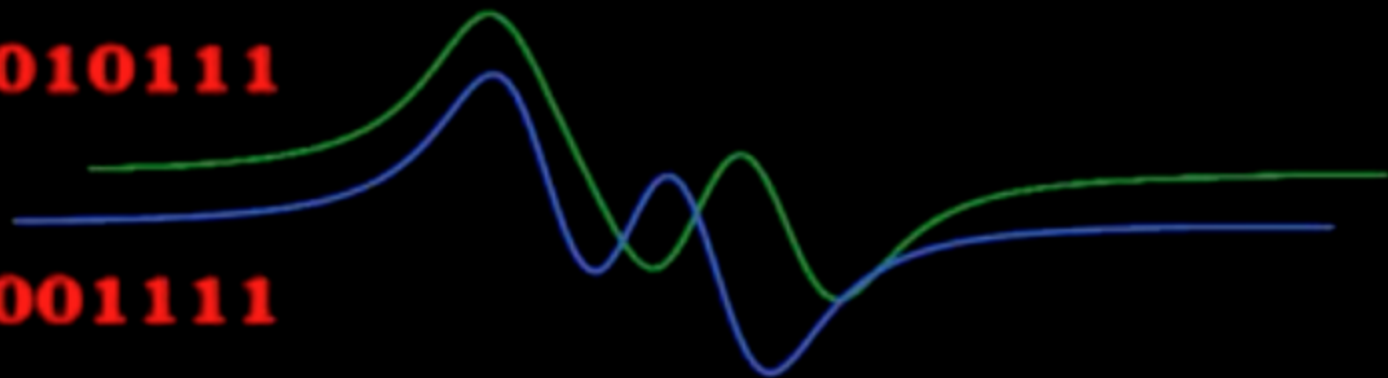
Platter

The diagram illustrates the layered structure of a hard drive platter. It consists of four overlapping circular layers, each with a central hole. From left to right, the layers are: a brownish-yellow Carbon Overcoat, a teal Magnetic Layer, a purple Chromium layer, and a light blue Aluminium layer. The layers are shown in a perspective view, overlapping each other. A red arrow points from the text 'Cobalt with platinum & nickel' to the Magnetic Layer.

Partial Response Maximum Likelihood

010111

001111



Partial Response Maximum Likelihood

010111

001111

