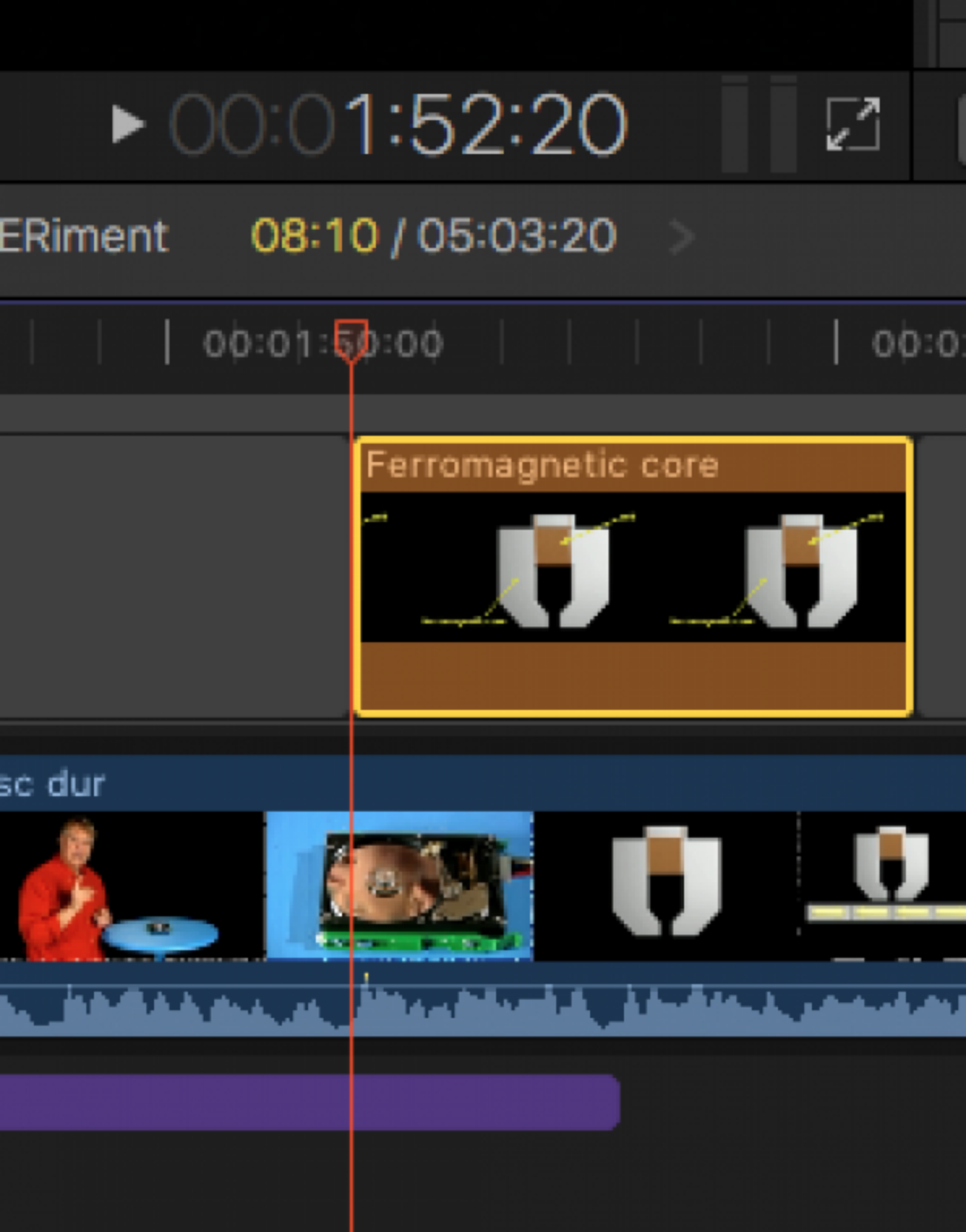
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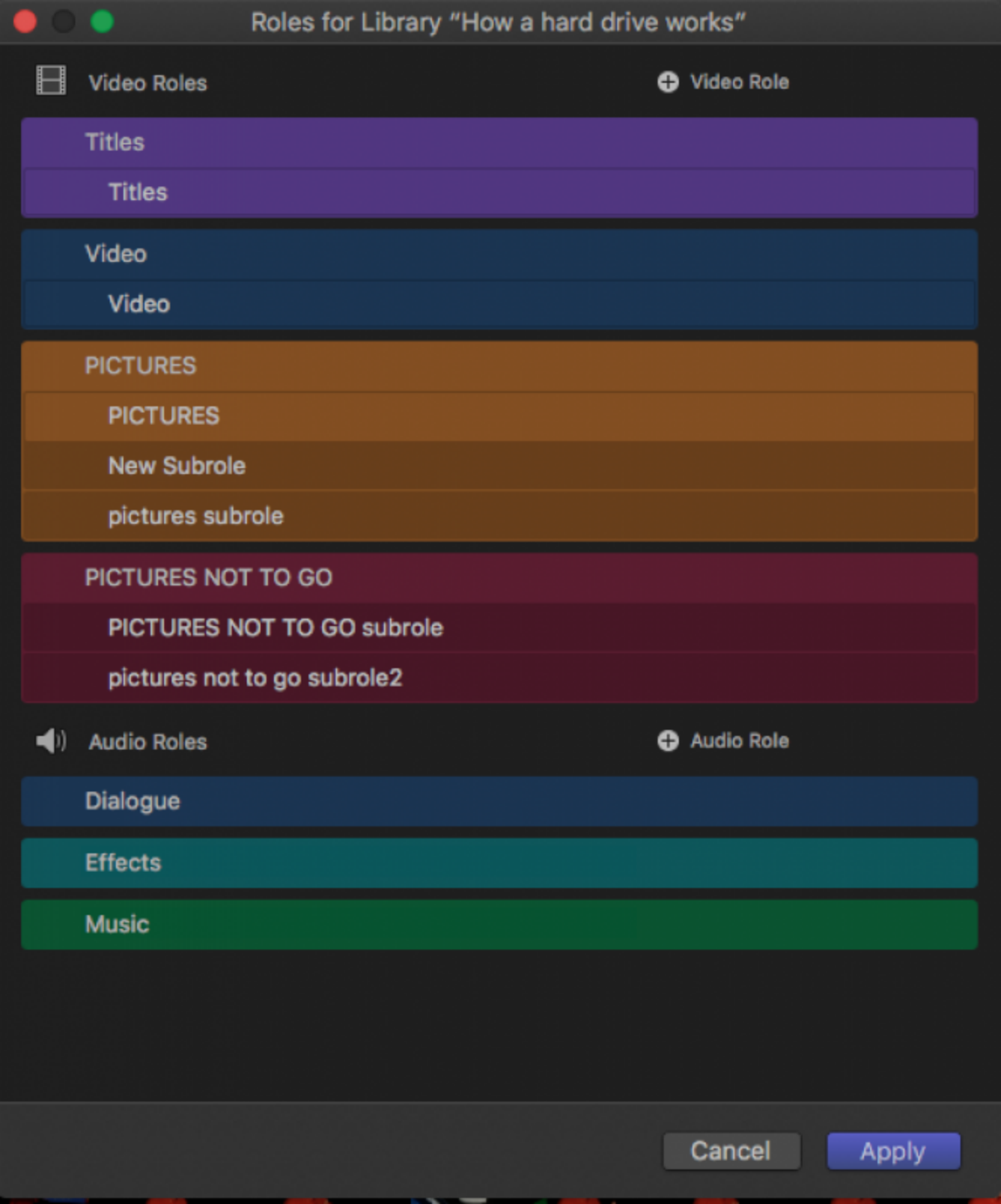
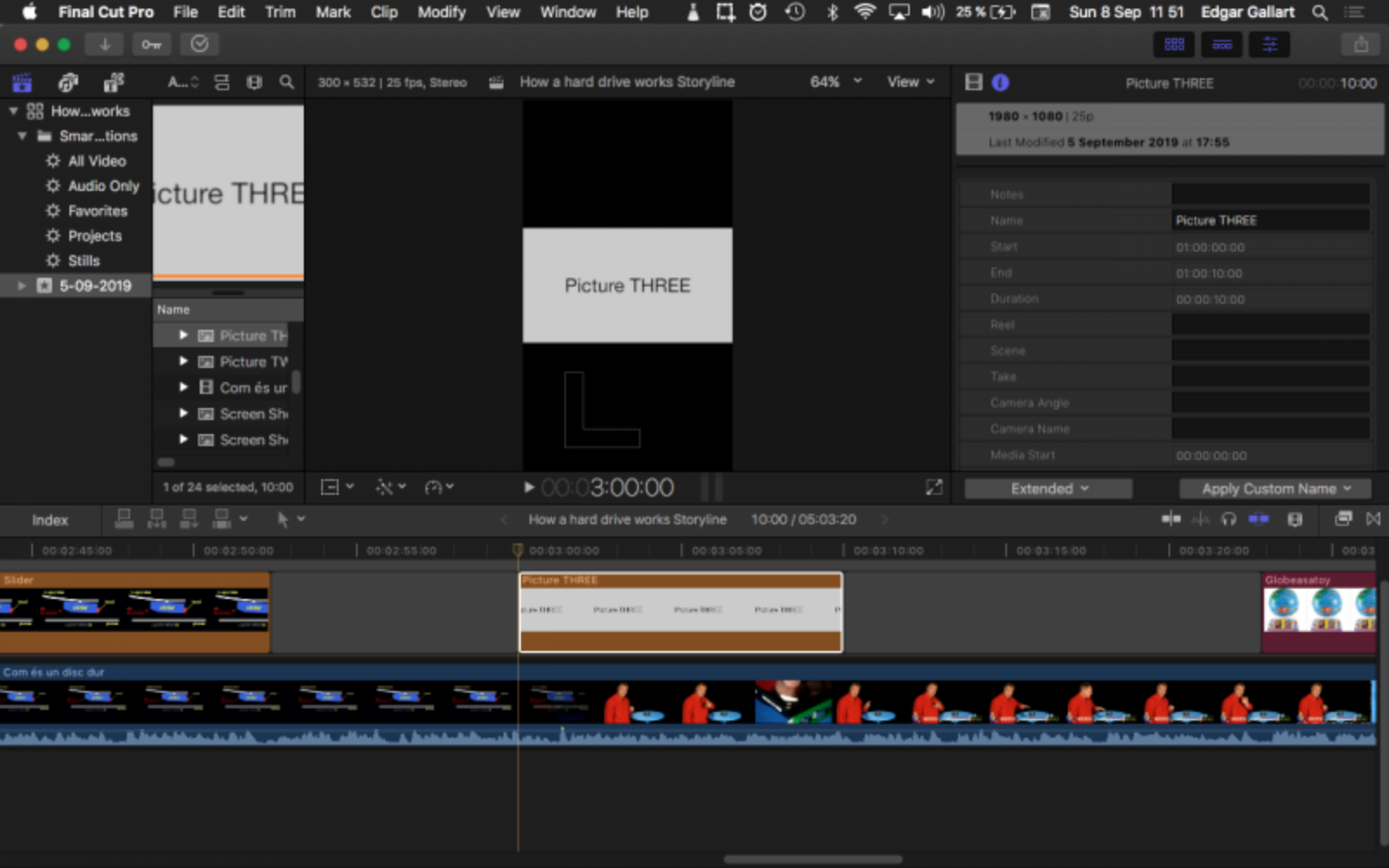
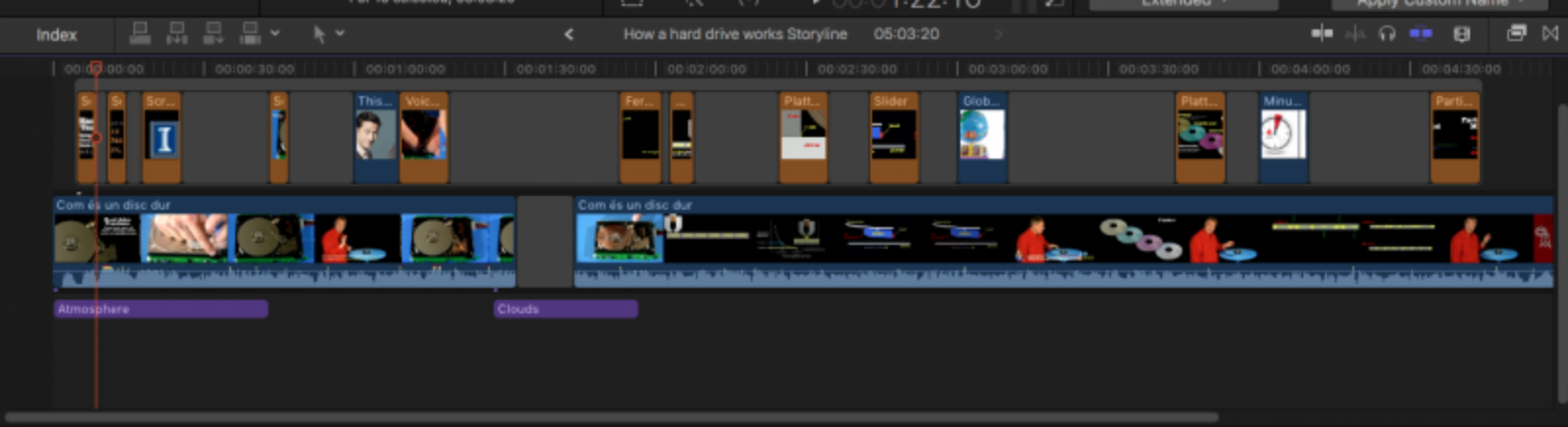
ERiment
08:10 / 05:03:20
00:01:50:00
Ferromagnetic core
sc dur


Roles for Library "How a hard drive works"
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


Final Cut Pro File Edit Trim Mark Clip Modify View Window Help
Sun 8 Sep 11 51 Edgar Gallart
300 × 532 | 25 fps, Stereo
How a hard drive works Storyline
64%
View
Picture THREE
00:00:10:00
1980 × 1080 | 25p
Last Modified 5 September 2019 at 17:55
How...works
Smar...tions
All Video
Audio Only
Favorites
Projects
Stills
5-09-2019
Name
Picture THREE
Notes
Name
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
1 of 24 selected, 10:00
00:03:00:00
Extended
Apply Custom Name
Index
How a hard drive works Storyline
10:00 / 05:03:20
Slider
Picture THREE
Globeasatoy
Com és un disc dur


Index
How a hard drive works Storyline
05:03:20
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00:01:00:00
00:01:30:00
00:02:00:00
00:02:30:00
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00:03:30:00
00:04:00:00
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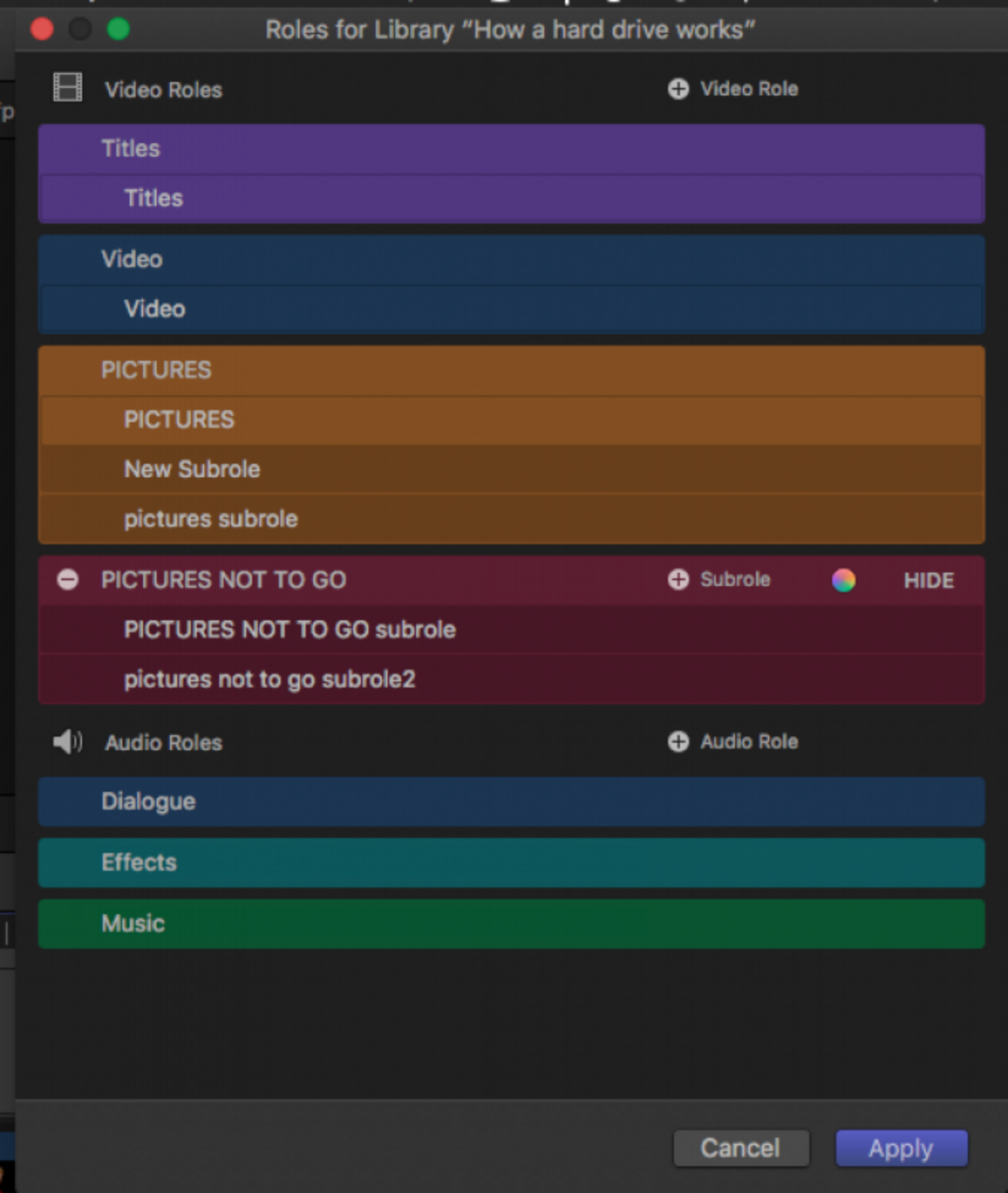
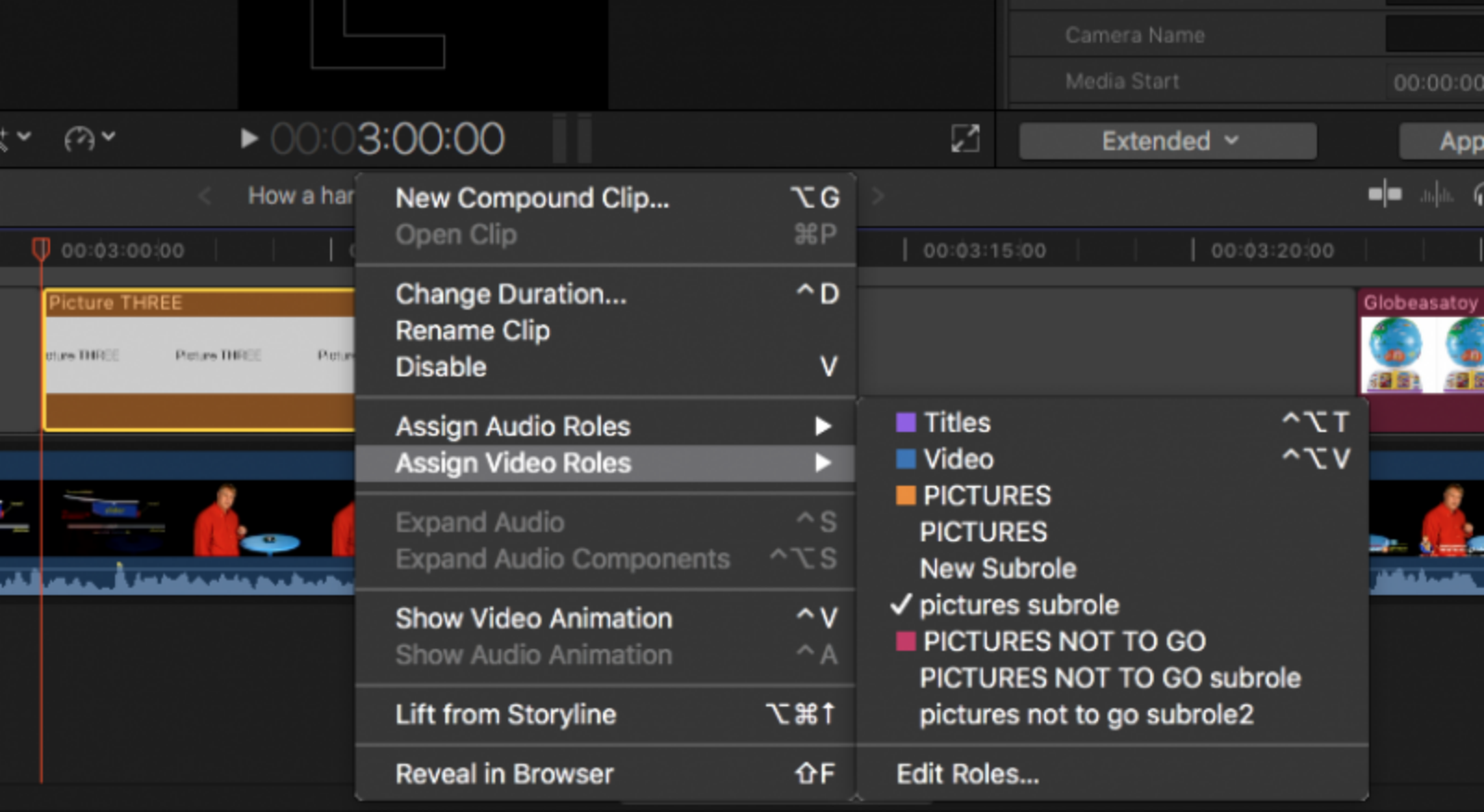
Sor...
This...
Voic...
Fer...
Platt...
Slider
Glob...
Platt...
Minu...
Parti...
Com és un disc dur
Com és un disc dur
Atmosphere
Clouds


ASIA
PACIFIC OCEAN
INDIAN OCEAN
AUSTRALIA
N
W
E
S
PACIFIC OCEAN
Fisher-Price
SMART STAGES


Roles for Library "How a hard drive works"
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
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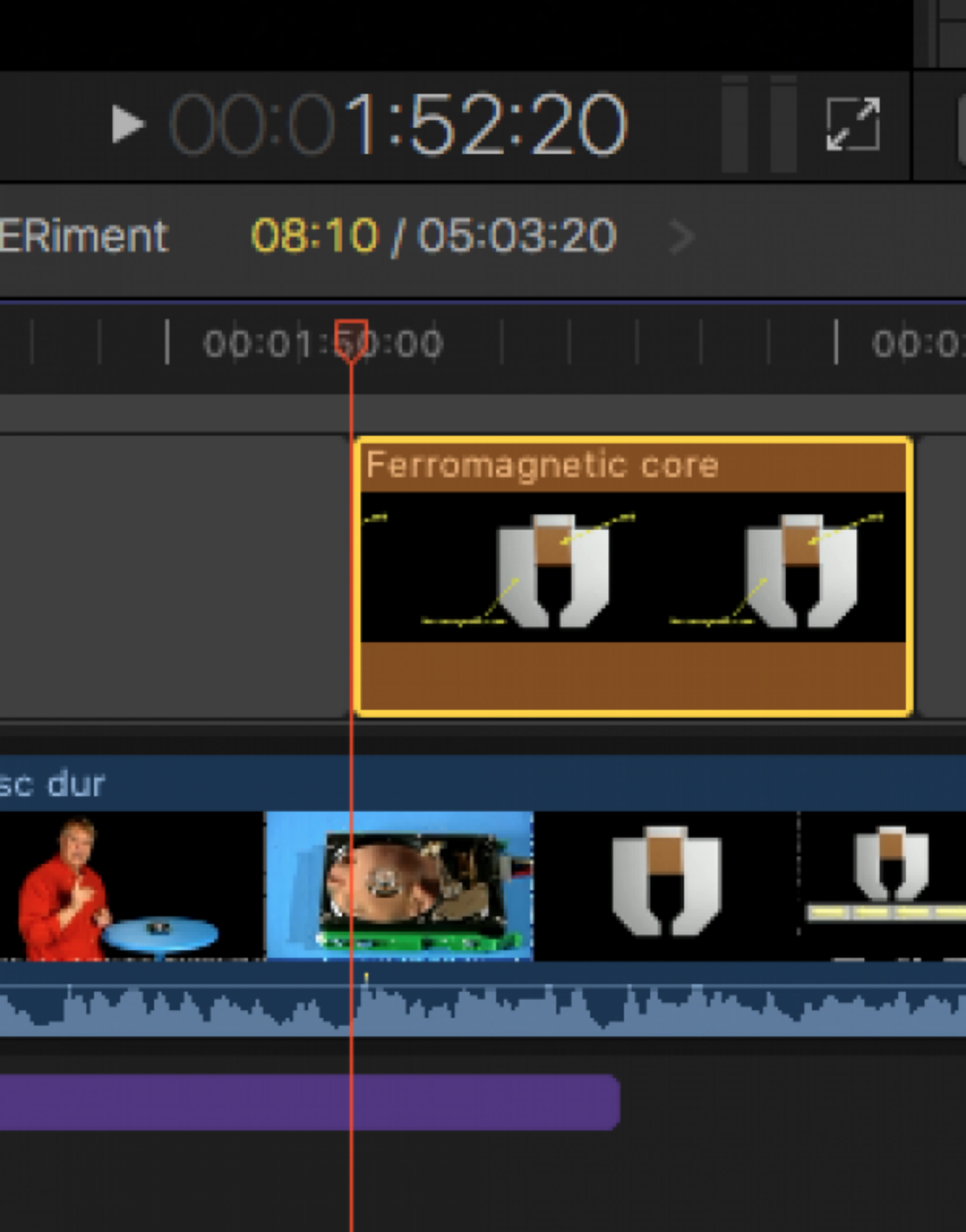
00:03:00:00
Extended
App
How a har
00:03:00:00
00:03:15:00
00:03:20:00
Picture THREE
Globeasatoy
New Compound Clip... ⌥G
Open Clip ⌘P
Change Duration... ^D
Rename Clip
Disable V
Assign Audio Roles
Assign Video Roles
Expand Audio ^S
Expand Audio Components ^⌥S
Show Video Animation ^V
Show Audio Animation ^A
Lift from Storyline ⌥⌘↑
Reveal in Browser ⇧F
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...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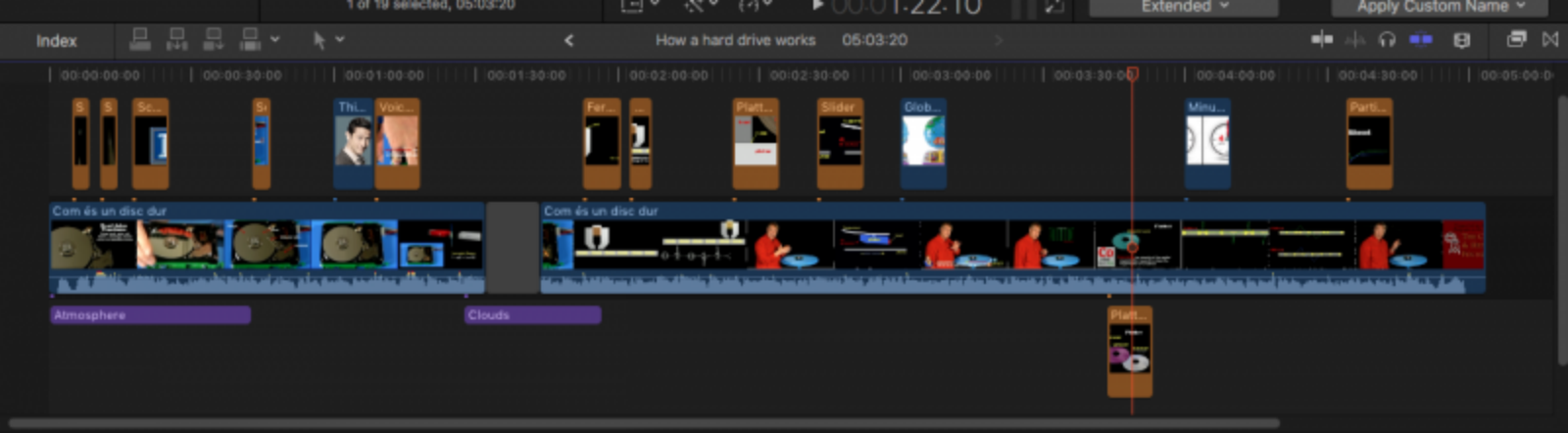
1 of 19 selected, 05:03:20
Extended
Apply Custom Name
Index
How a hard drive works
05:03:20
00:00:00:00
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Voic...
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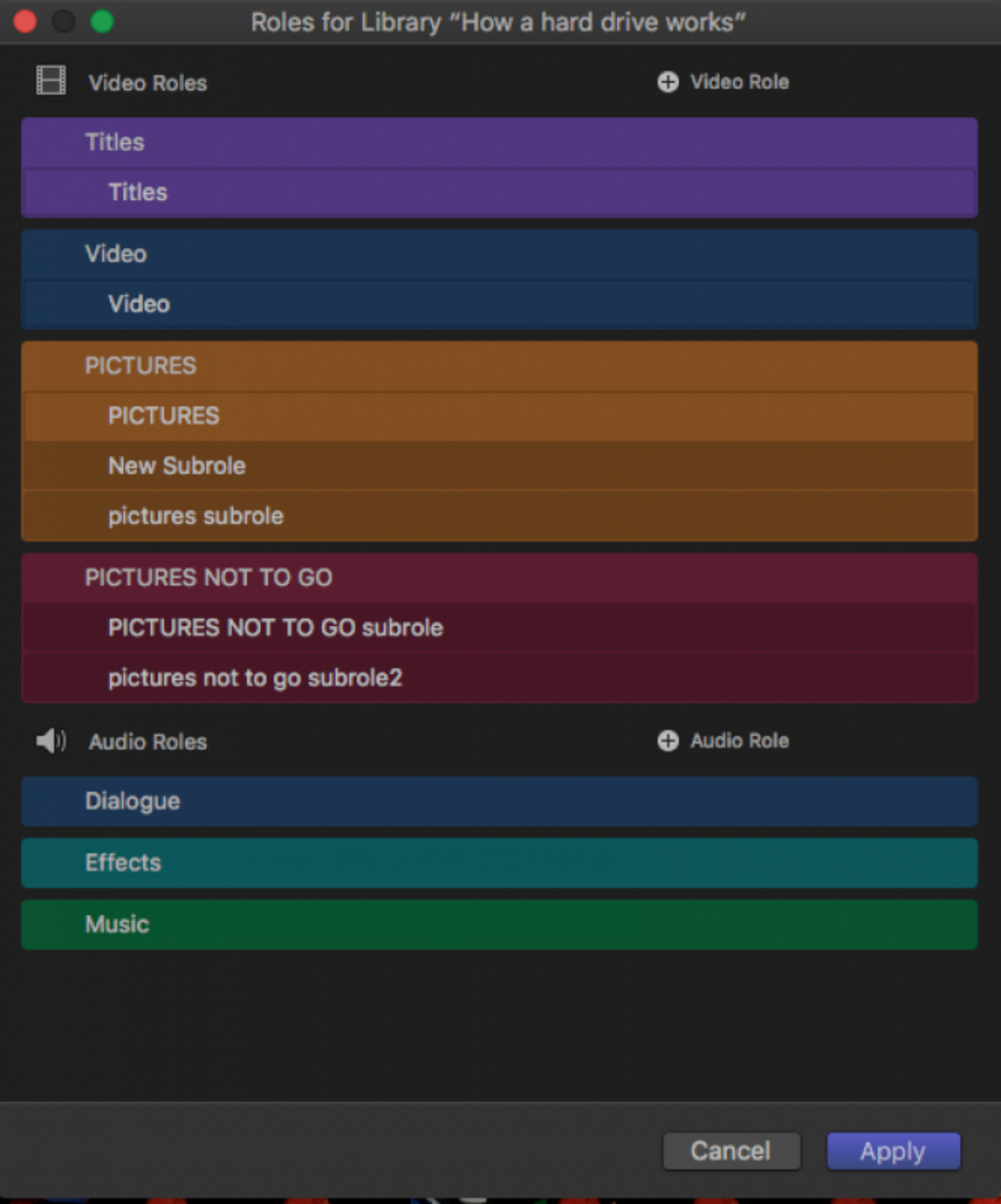
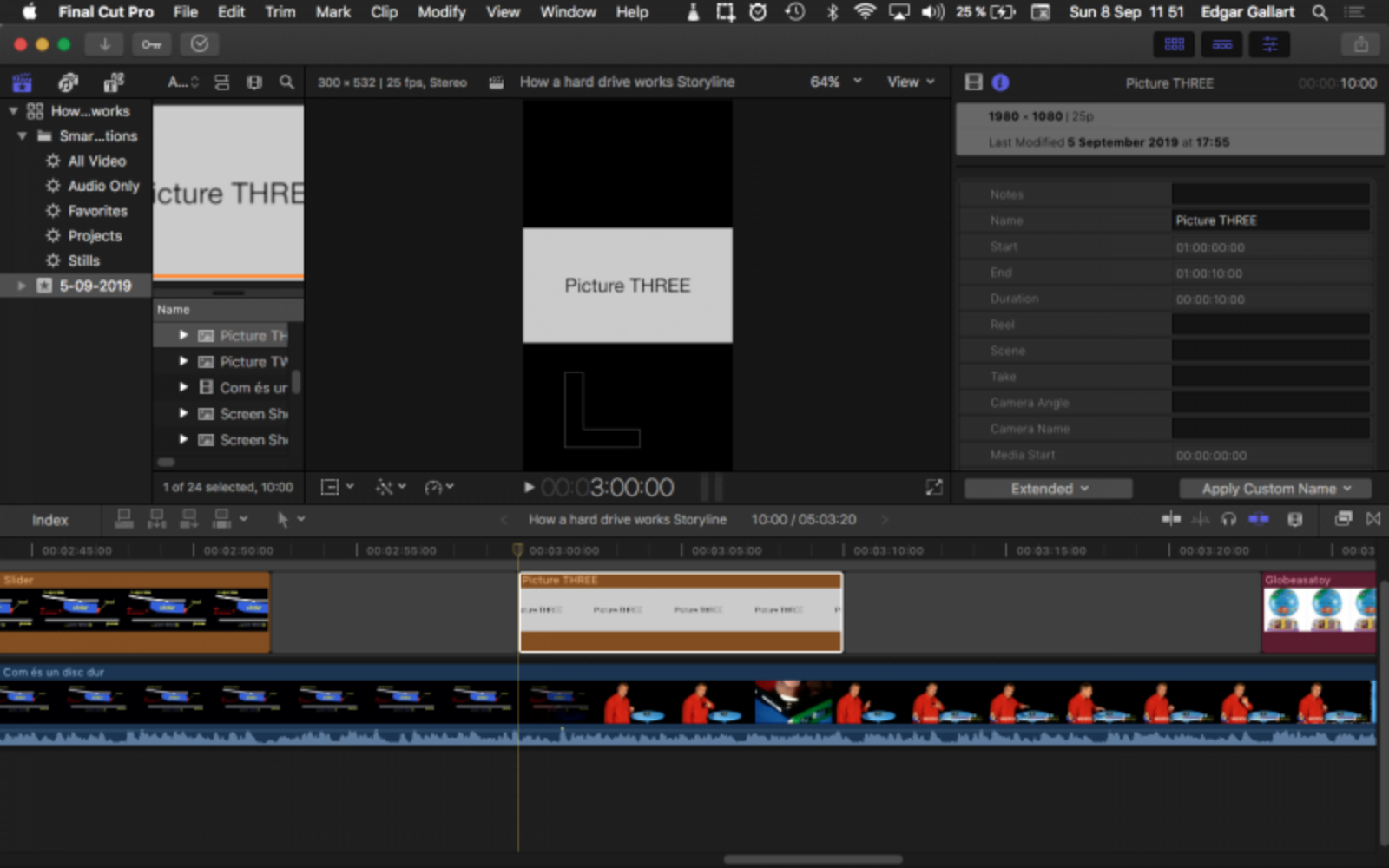
Platt...
Slider
Glob...
Minu...
Parti...
Com és un disc dur
Com és un disc dur
Atmosphere
Clouds
Platt...


4
MINUTES


Roles for Library "How a hard drive works"
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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Notes
Name
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01:00:00:00
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01:00:10:00
Duration
00:00:10:00
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Take
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Camera Name
Media Start
00:00:00:00
1 of 24 selected, 10:00
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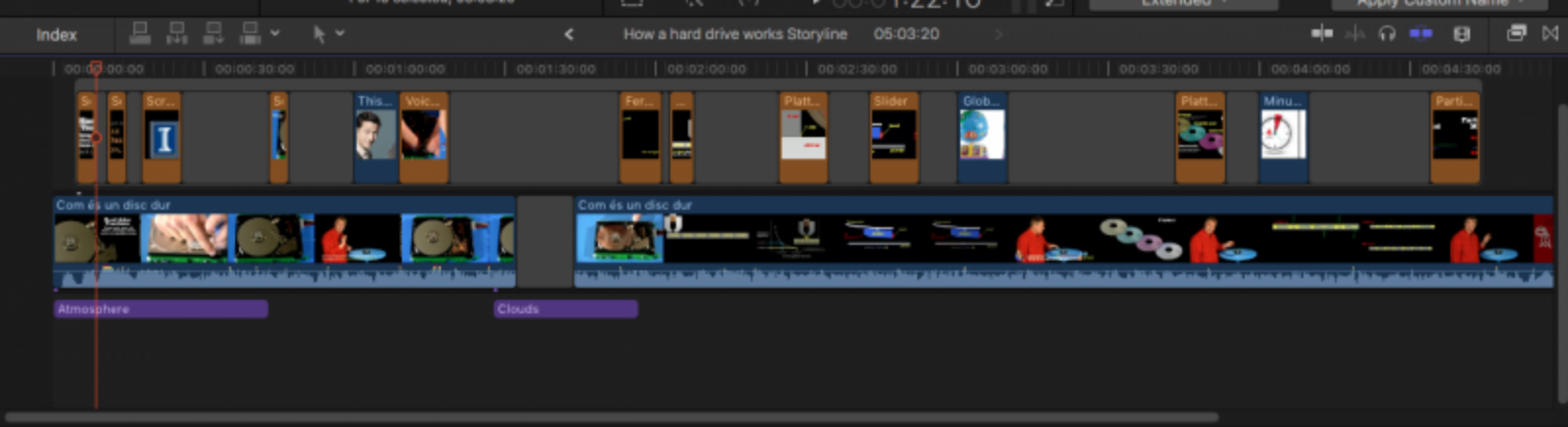
Com és un disc dur


Index
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05:03:20
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00:01:00:00
00:01:30:00
00:02:00:00
00:02:30:00
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INDIAN OCEAN
AUSTRALIA
N
W
E
S
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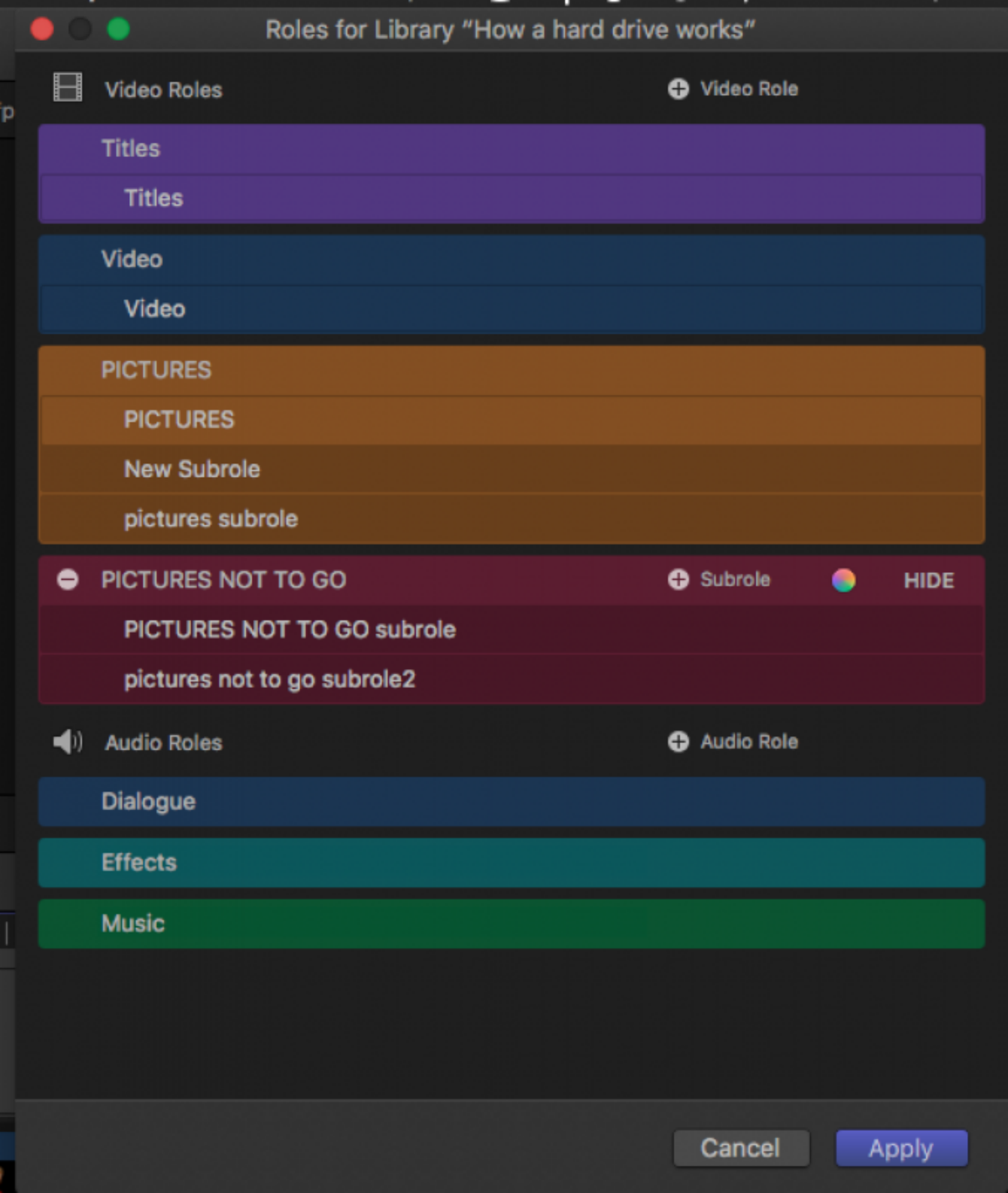
Fisher-Price
SMART STAGES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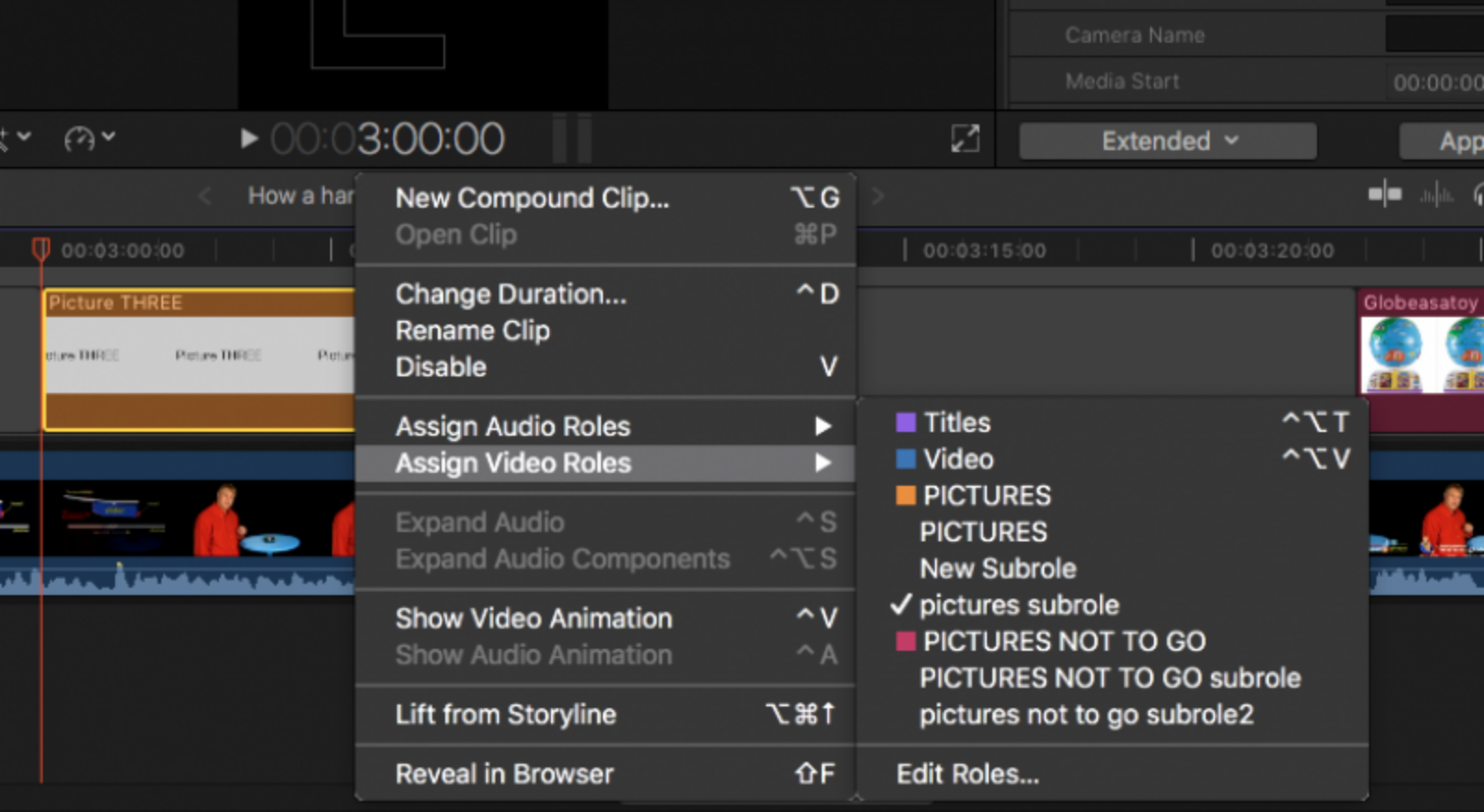
Video Role
Titles
Titles
Video
Video
PICTURES
PICTURES
New Subrole
pictures subrole
PICTURES NOT TO GO
Subrole
HIDE
PICTURES NOT TO GO subrole
pictures not to go subrole2
Audio Roles
Audio Role
Dialogue
Effects
Music
Cancel
Apply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Lift from Storyline ⌥⌘↑
Reveal in Browser ⇧F
Titles ^⌥T
Video ^⌥V
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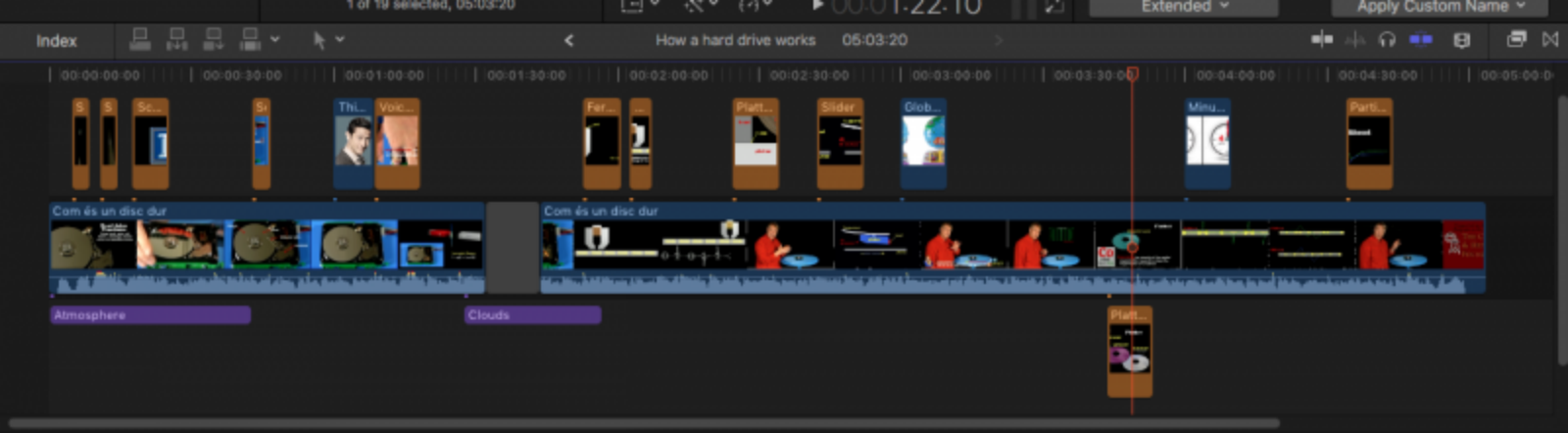
PICTURES
New Subrole
pictures subrole
PICTURES NOT TO GO
PICTURES NOT TO GO subrole
pictures not to go subrole2
Edit Roles...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Glob...
Minu...
Parti...
Com és un disc dur
Com és un disc dur
Atmosphere
Clouds
Platt...


4
MINUTES

Hard drive Teardown

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

series 3 | engineerguy videos

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THE CAMILLE
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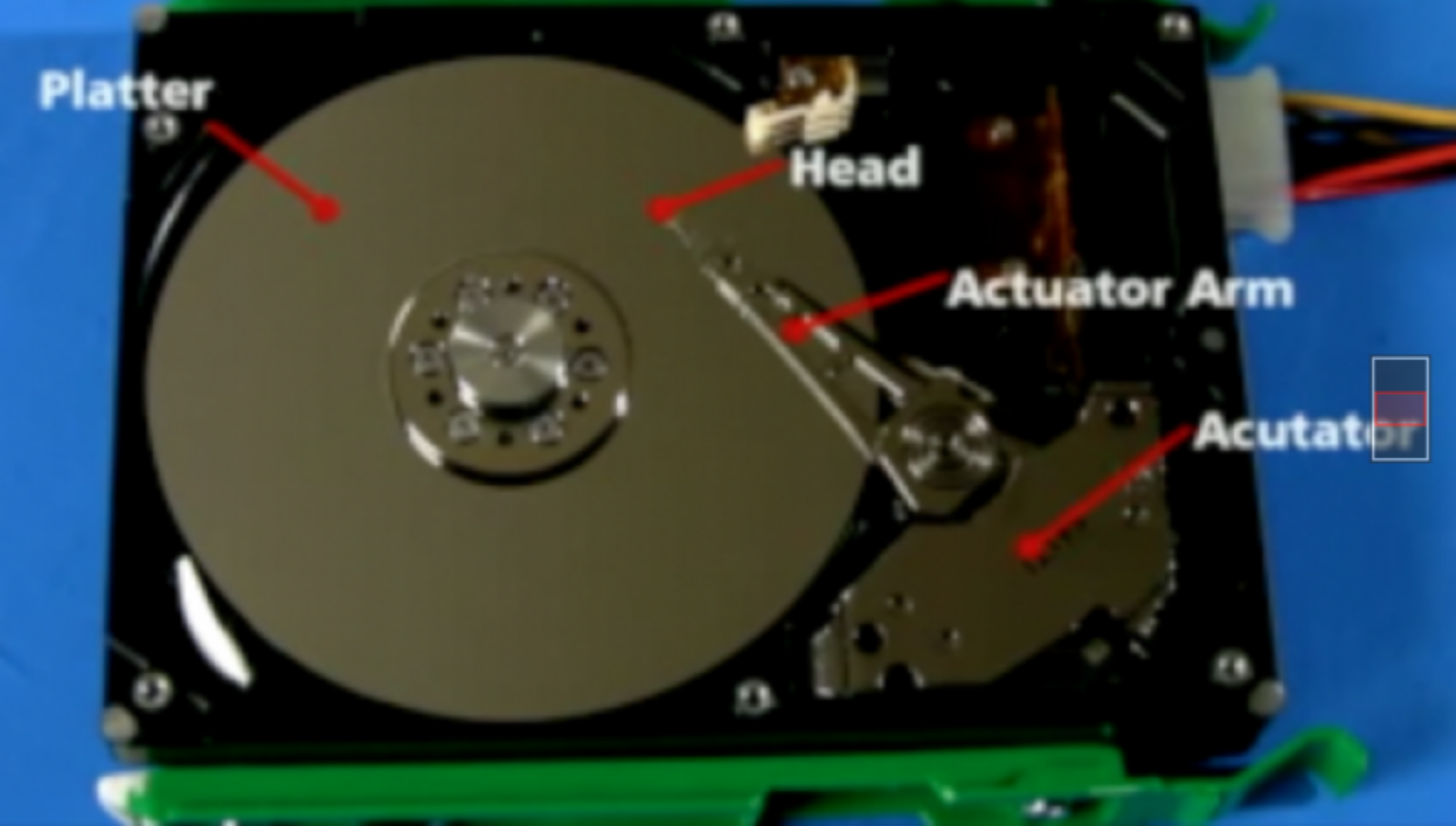
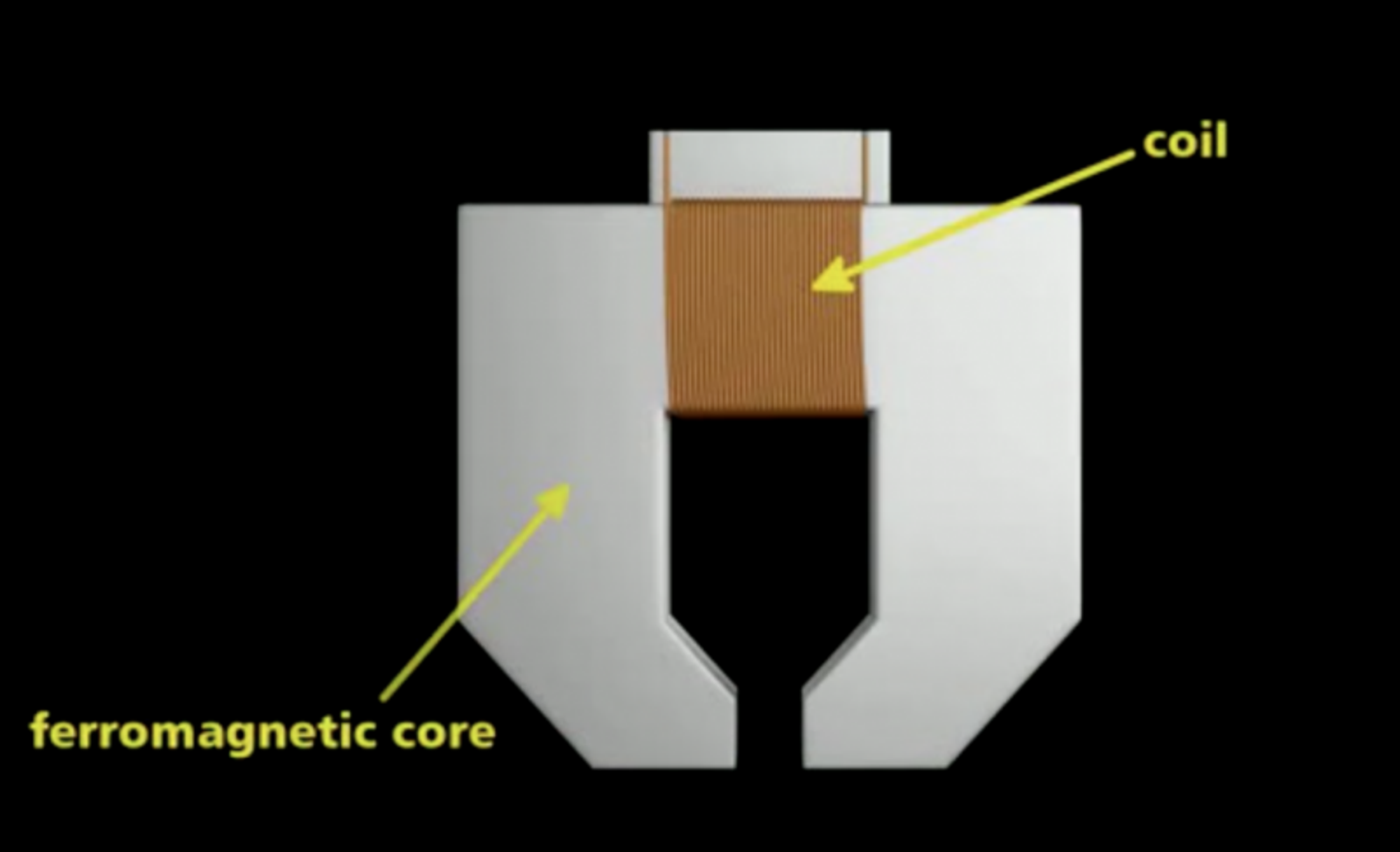
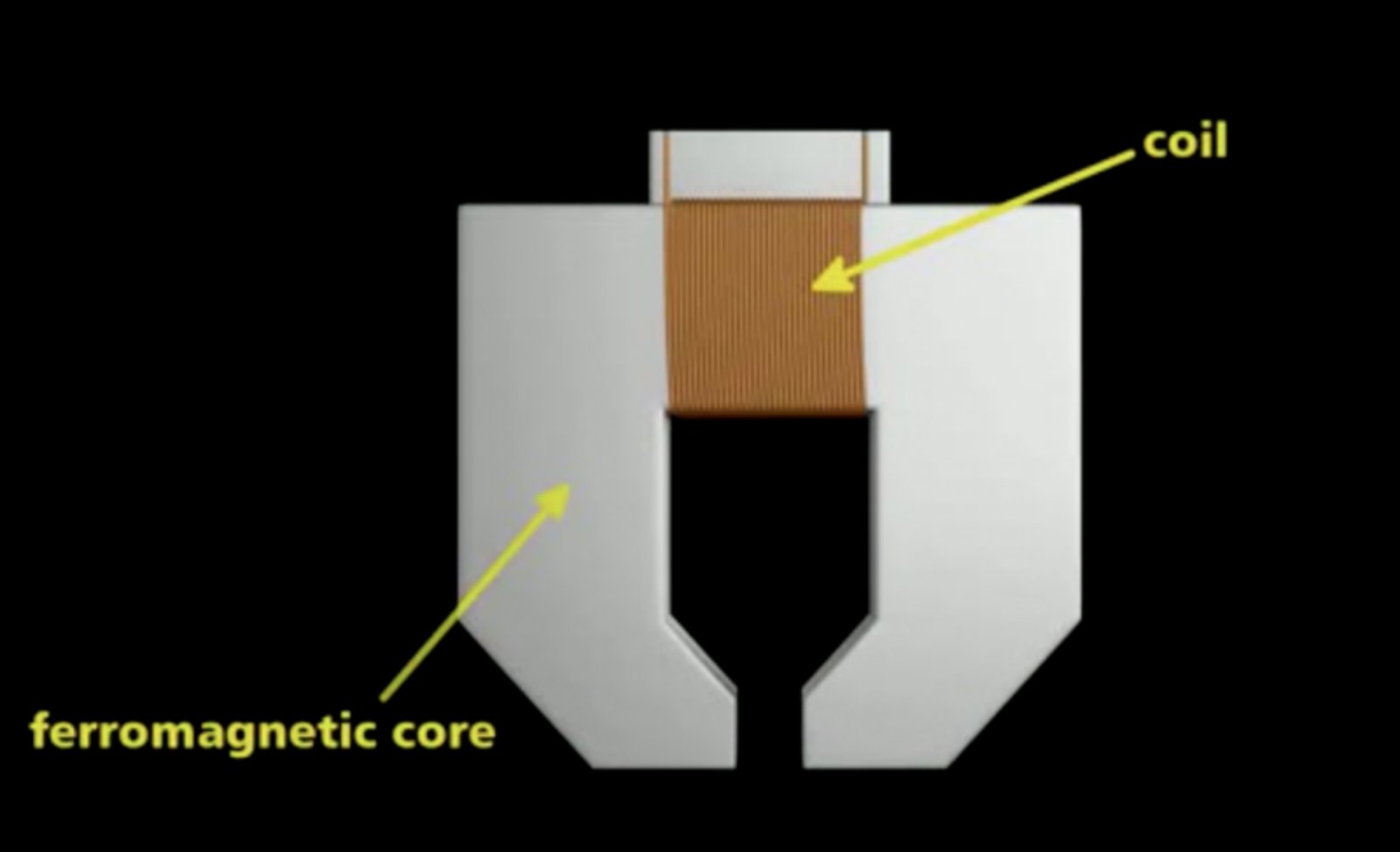
Bill Hammack

Department of Chemical
& Biomolecular Engineering
University of Illinois - Urbana


Platter
Head
Actuator Arm
Acutator


coil
ferromagnetic core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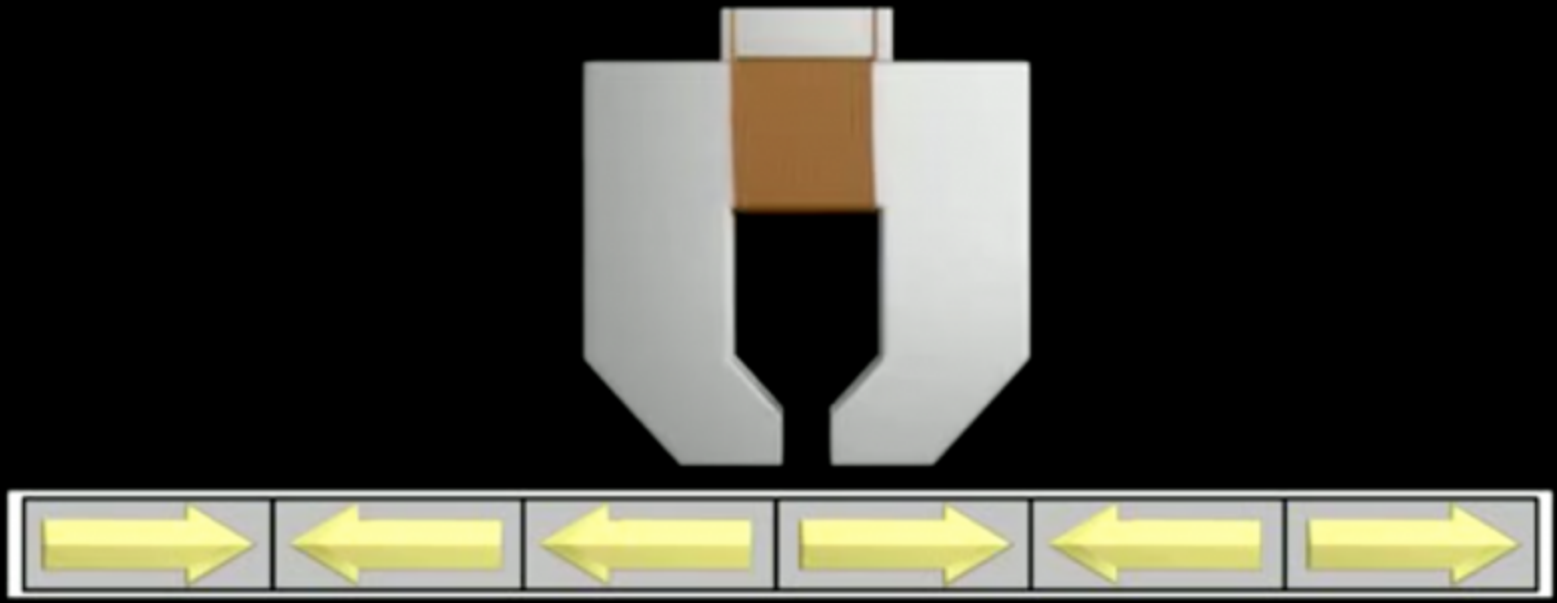
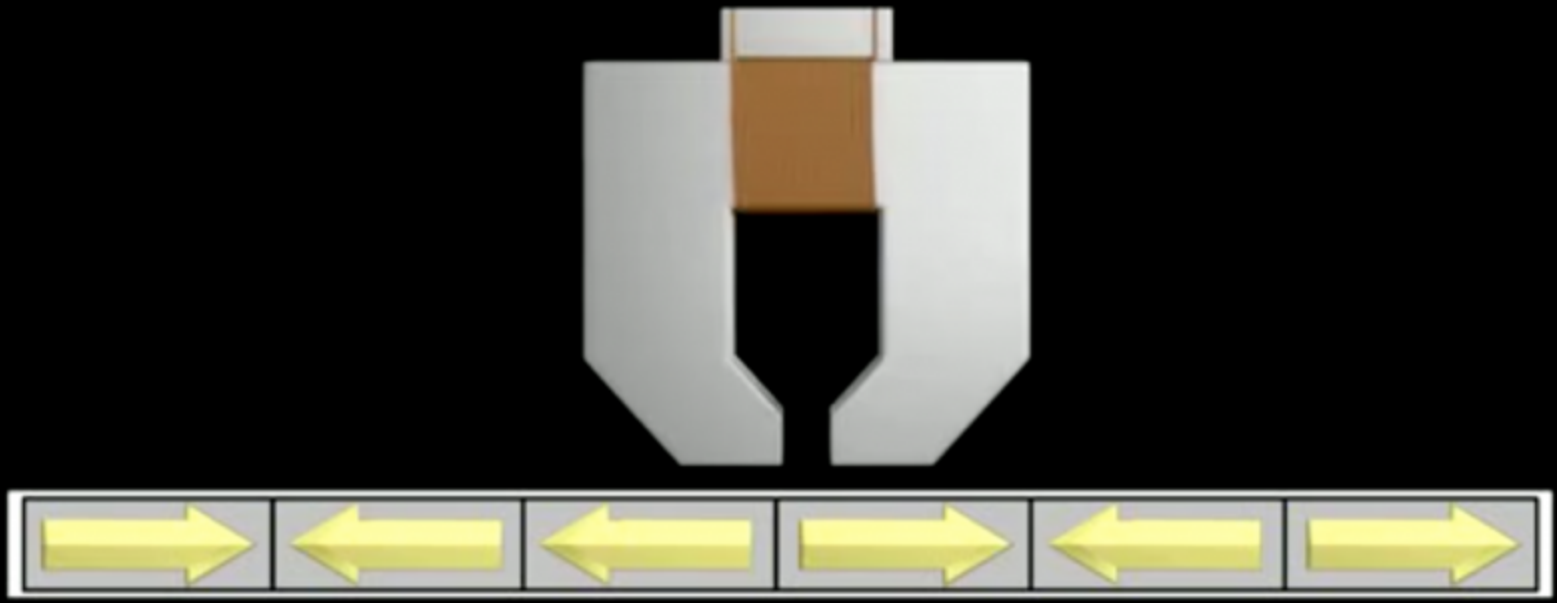


Faraday's Law The EMF (electromotive force) generated is proportional to the rate of change of the magnetic flux



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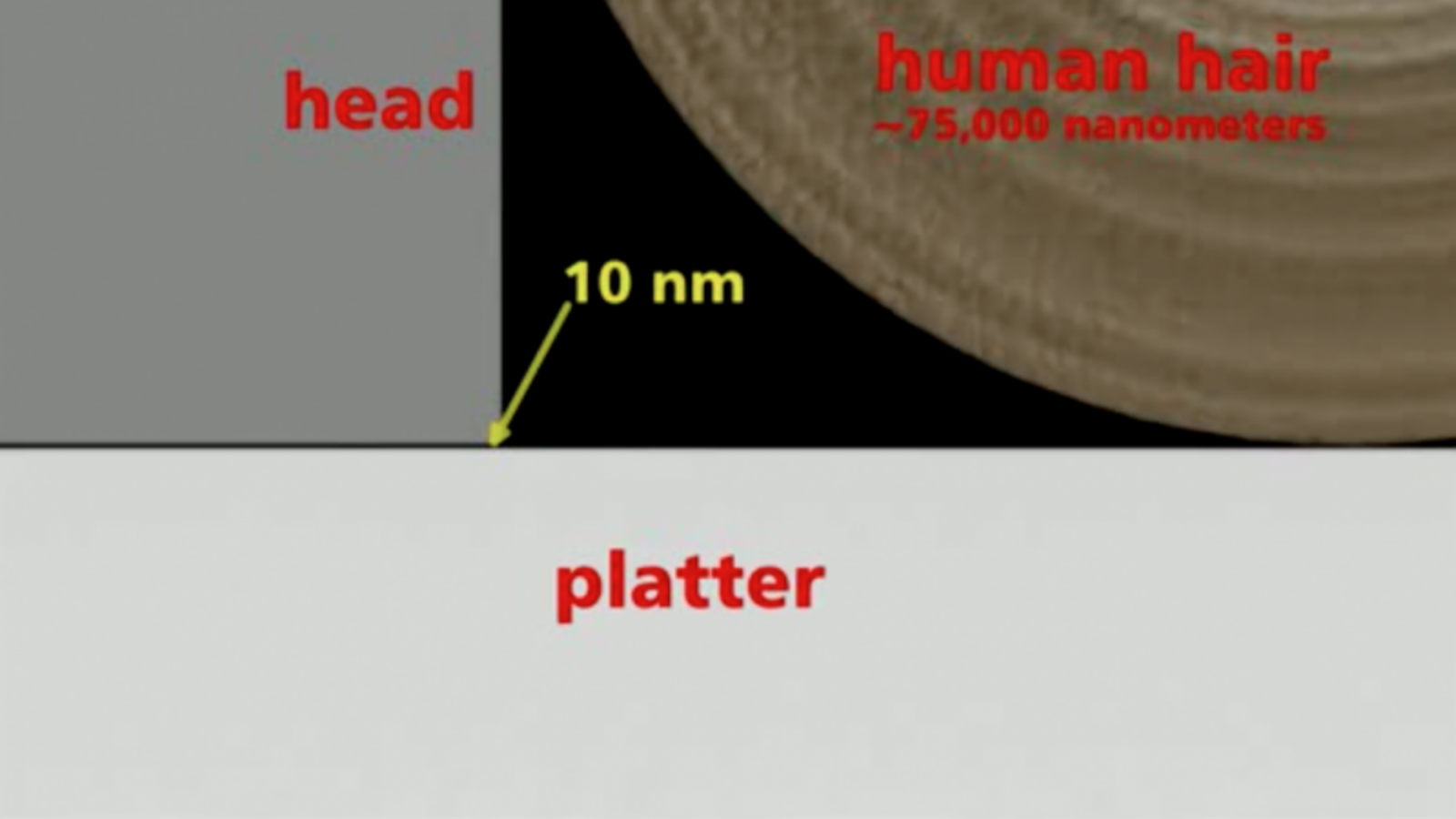
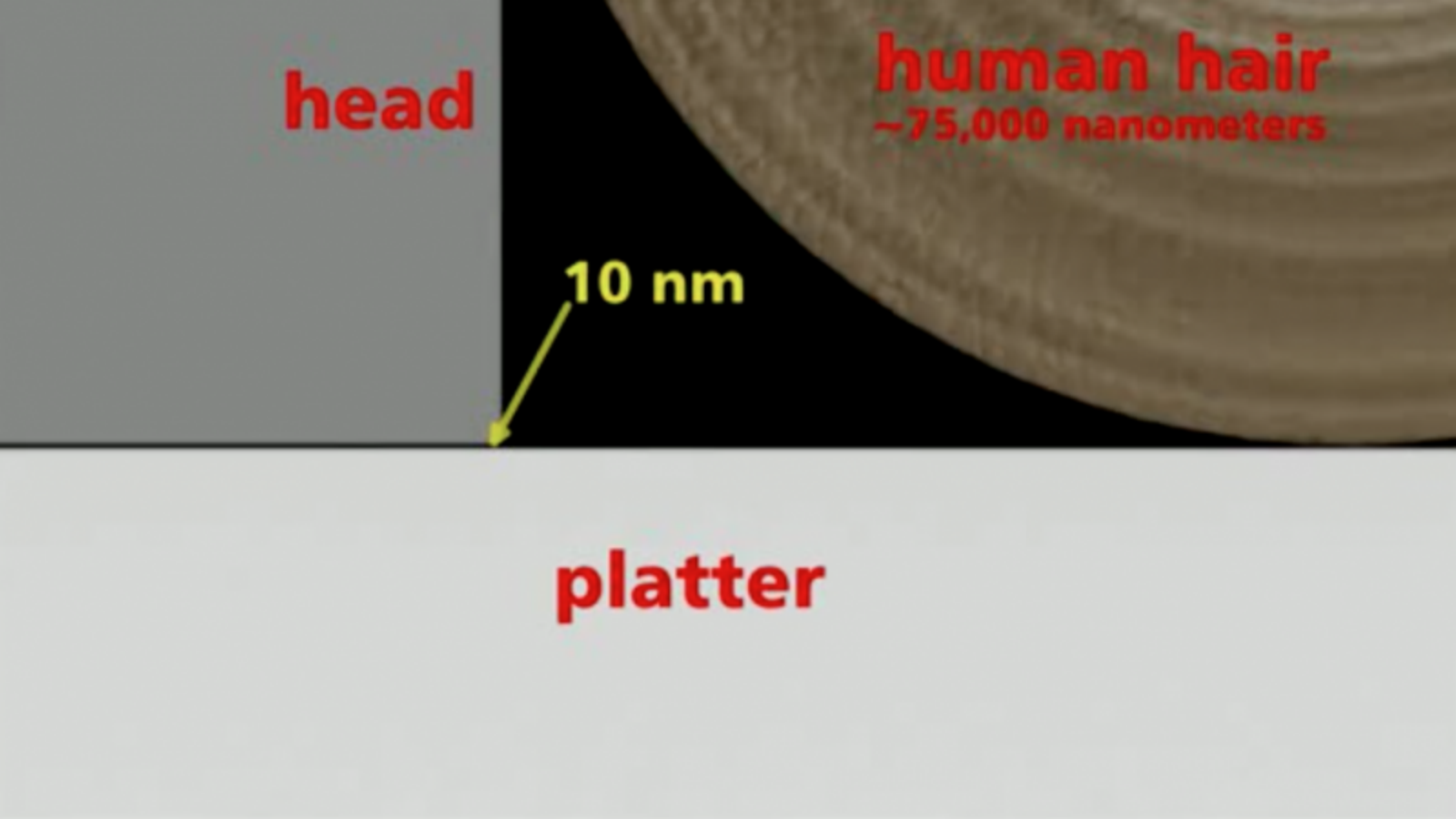

head
human hair
~75,000 nanometers
10 nm
platter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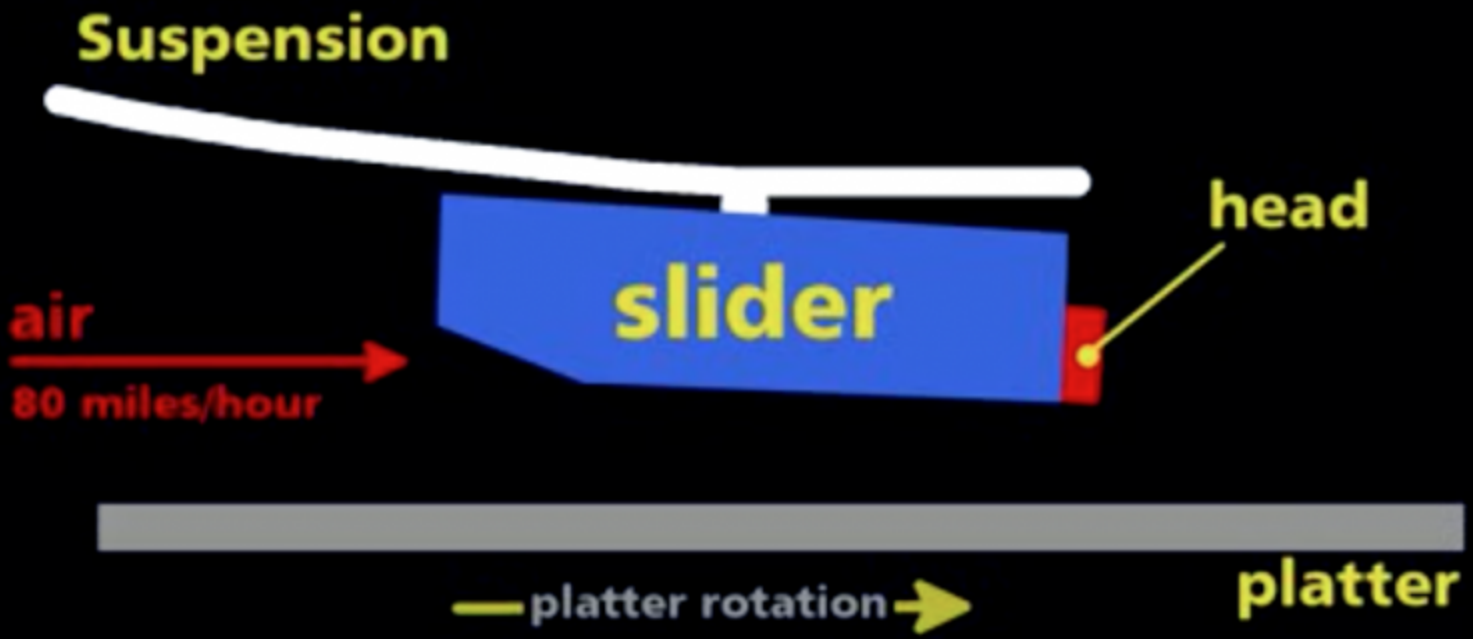
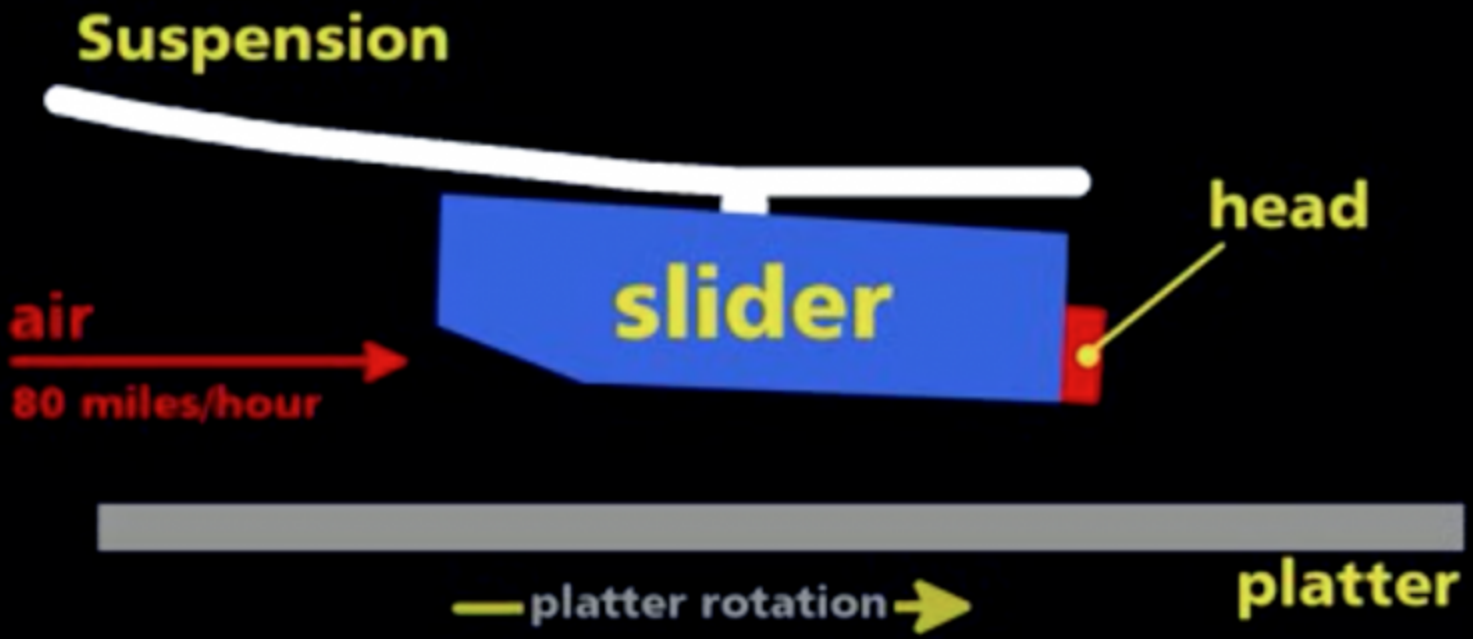

Suspension
head
slider
air
80 miles/hour
platter
platter rotation


Suspension
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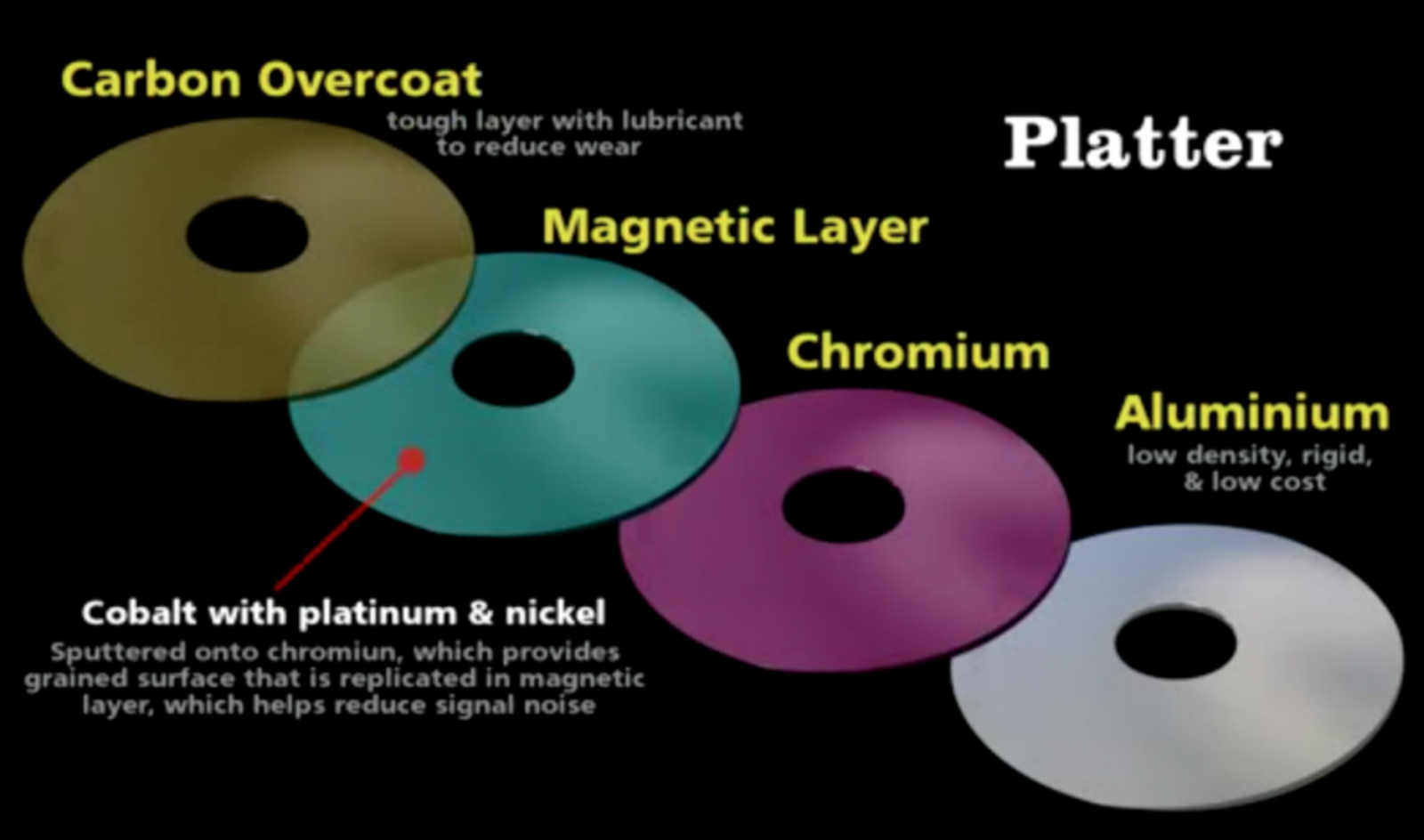
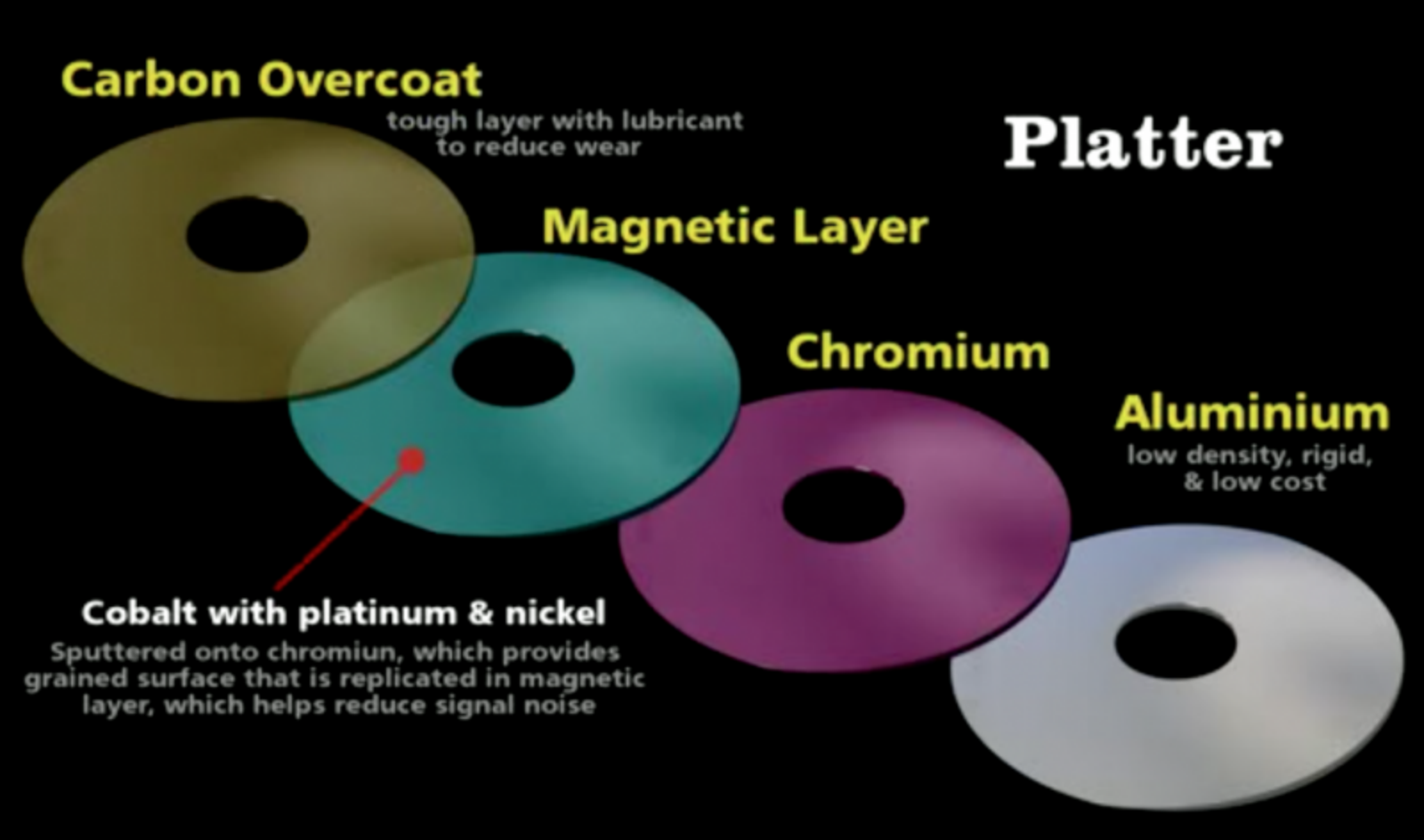
platter rotation


Carbon Overcoat
tough layer with lubricant
to reduce wear
Platter
Magnetic Layer
Chromium
Aluminium
low density, rigid,
& low cost
Cobalt with platinum & nickel
Sputtered onto chromiun, which provides
grained surface that is replicated in magnetic
layer, which helps reduce signal noise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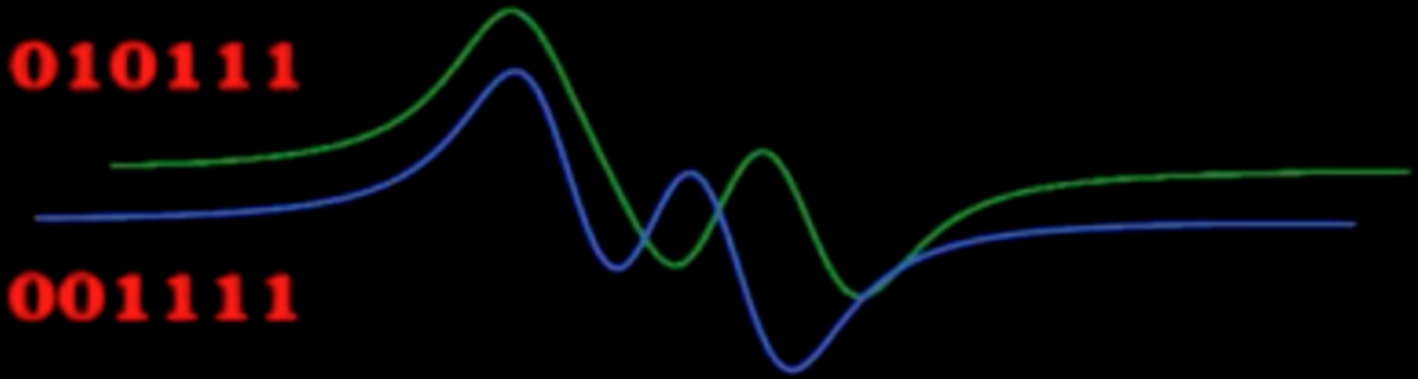
Partial Response Maximum Likelihood



Partial Response Maximum Likelihood