



From Dark Matter to Deep Learning in the Enterprise

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background

dark matter

DARK MATTER

Astrophysical Evidence

- Large scale structure
- Galaxy cluster dynamics
- Galactic rotation curves
- Gravitational lensing
- CMB spectrum

Suggests

- Nonbaryonic, non luminous matter
→ dark matter

Astrophysical model

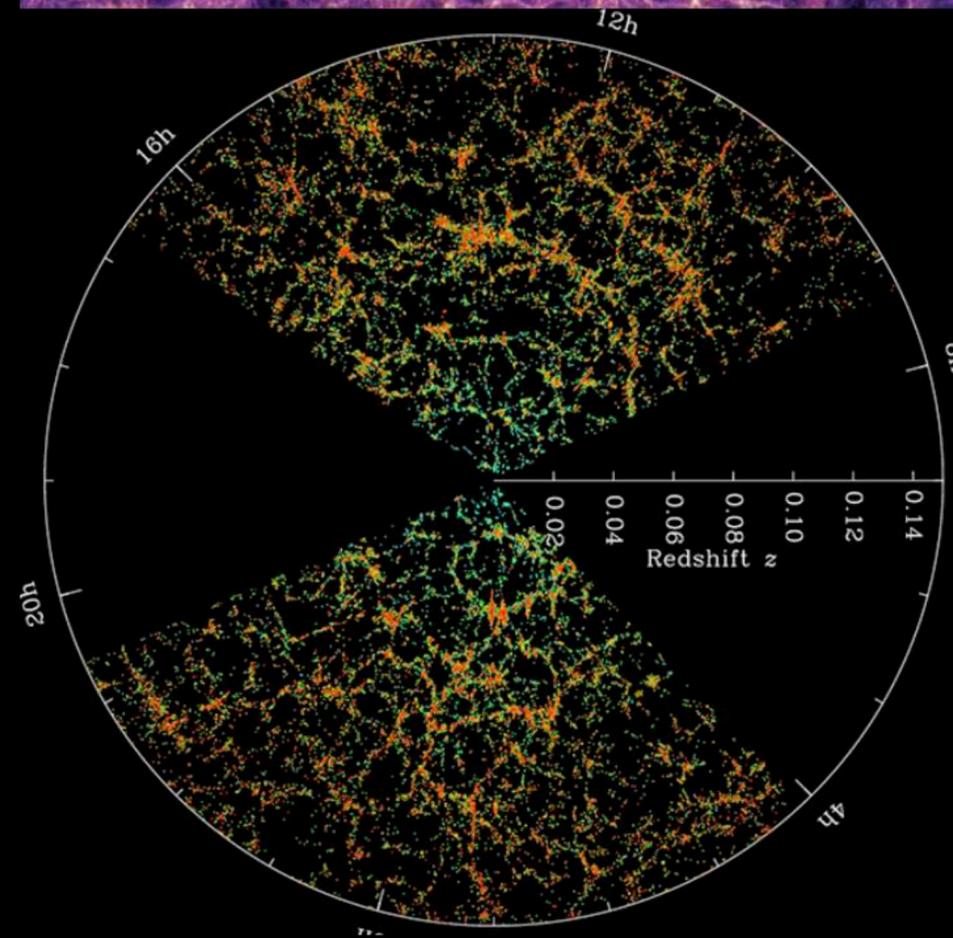
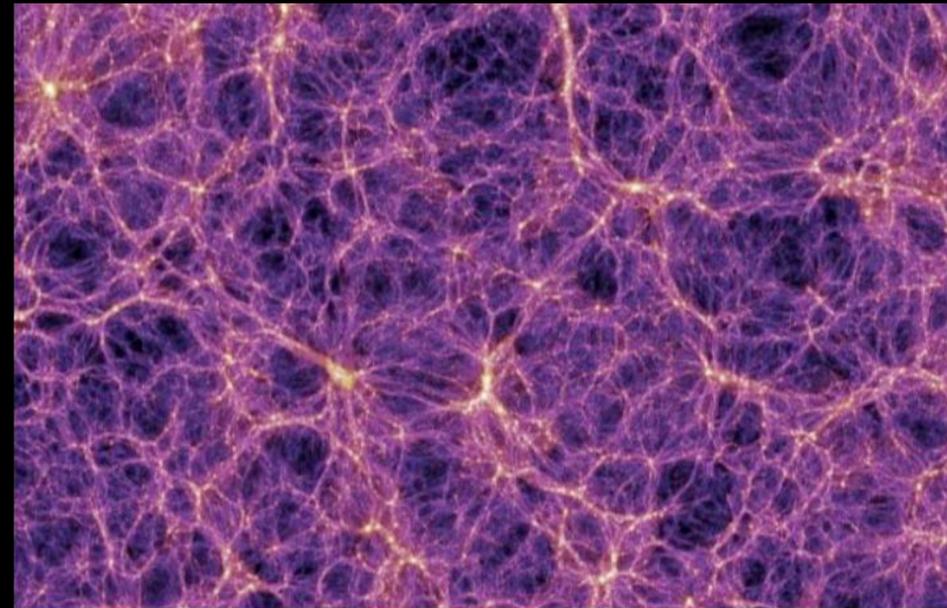
- LCDM

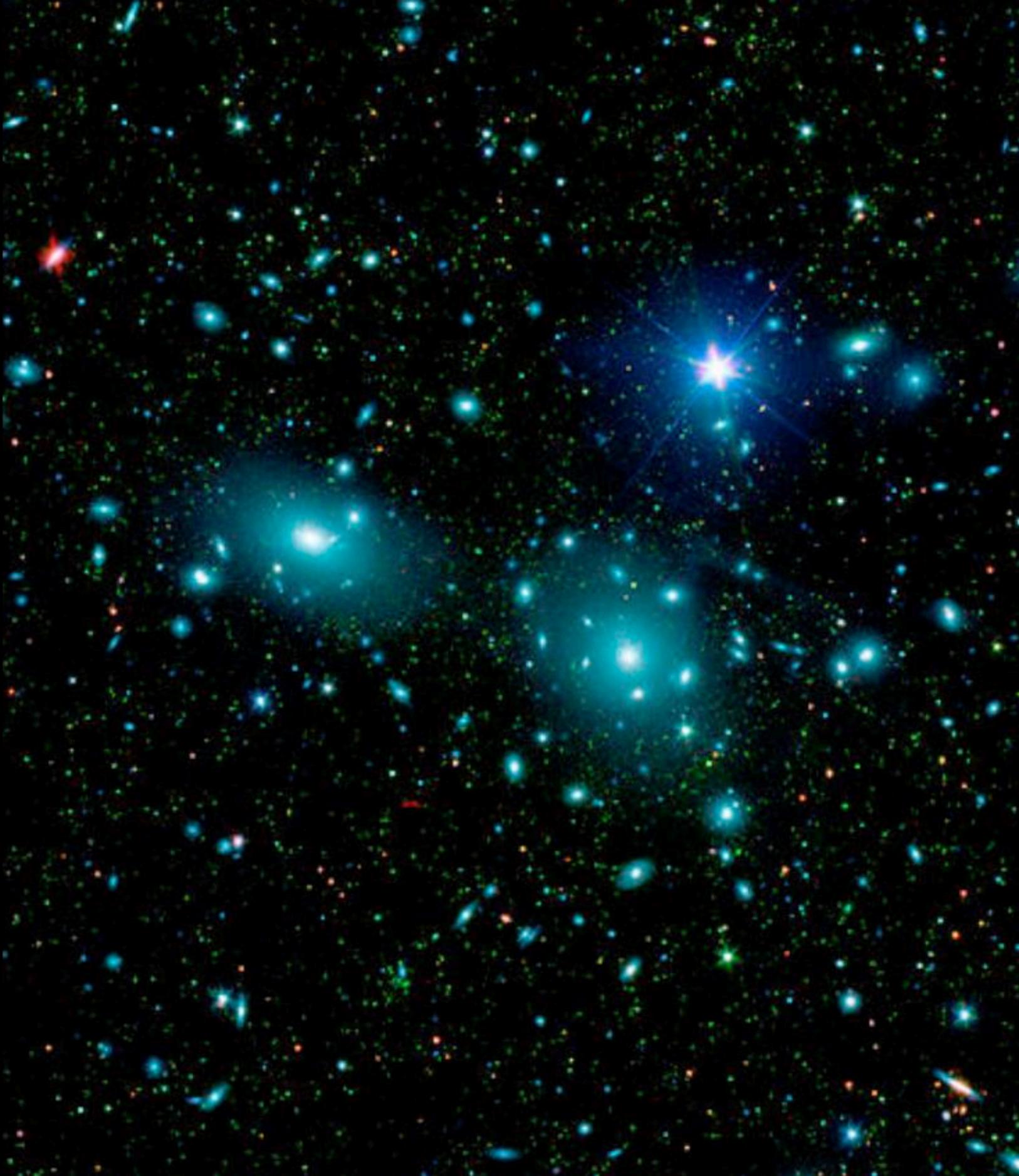


ASTROPHYSICAL EVIDENCE:

LARGE SCALE STRUCTURE

- Big Bang
- Universe cools
- DM collapses
- Cosmic web
- Halos
- Galaxies





ASTROPHYSICAL EVIDENCE:

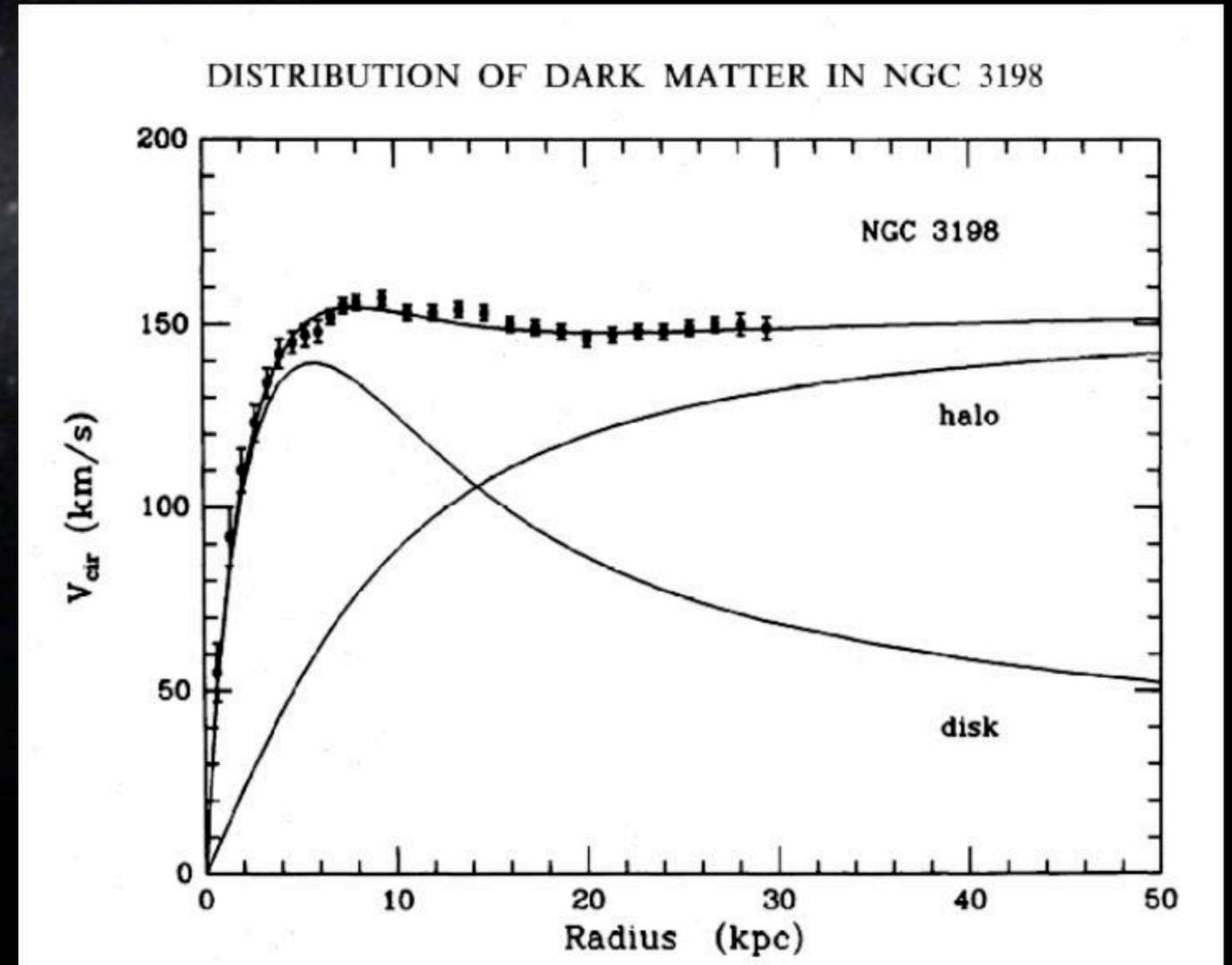
GALAXY CLUSTER DYNAMICS

- Observe luminous matter
- Calculate galactic motion
- Implied mass much larger

ASTROPHYSICAL EVIDENCE:

GALACTIC ROTATION CURVES

- Observe galactic disk
- Calculate star velocities
- Rotational curve is flat
- More mass we can't see





ASTROPHYSICAL EVIDENCE:

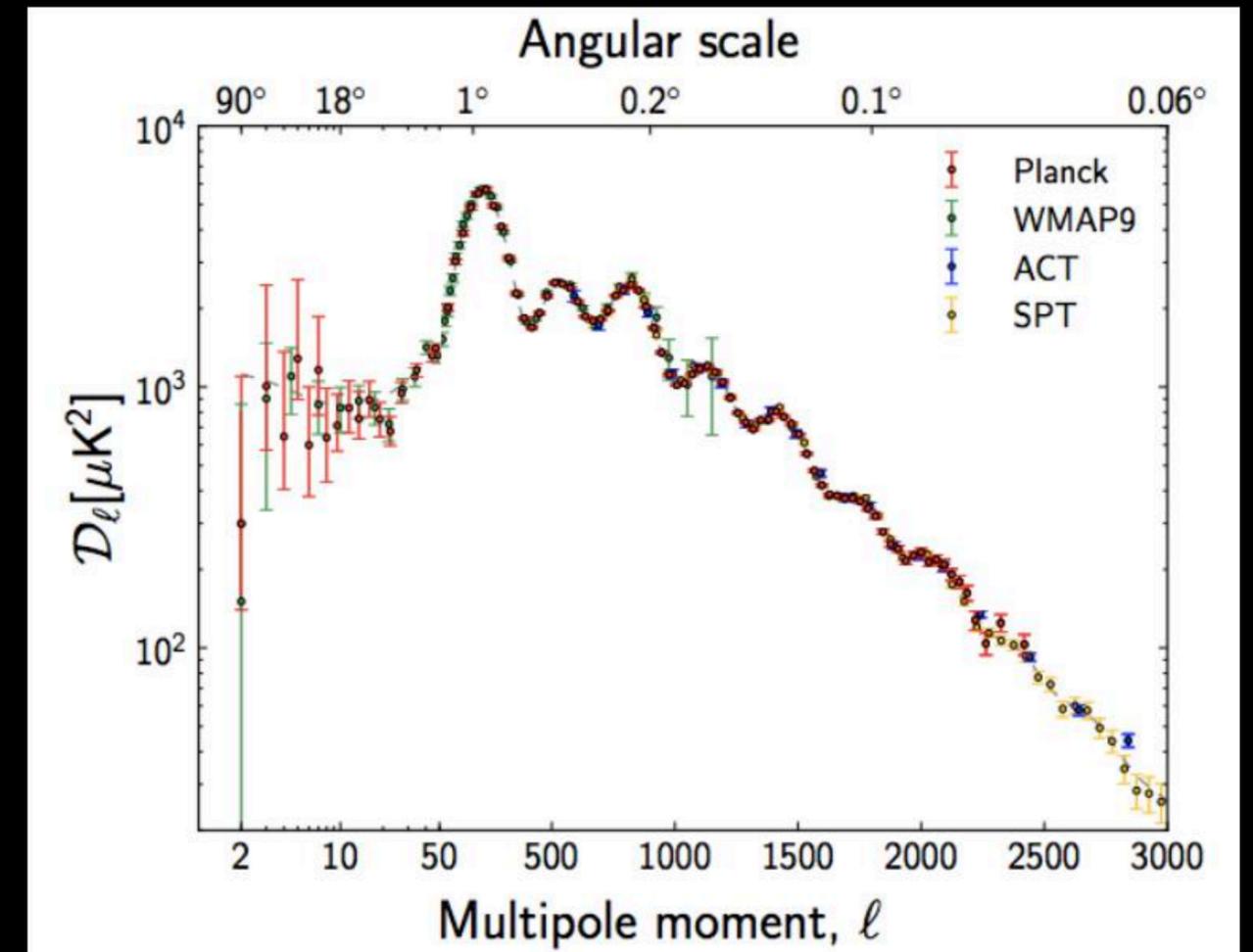
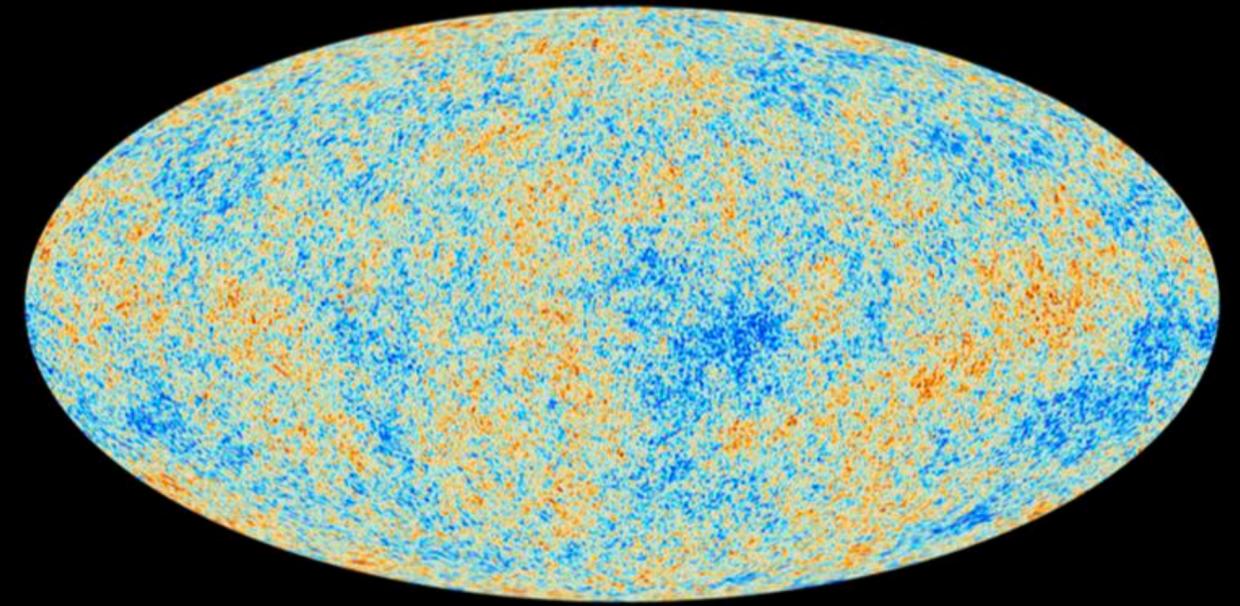
GRAVITATIONAL LENSING

- Look into deep space
- Strong bending of light
- Luminous mass not enough
- Again, mass we can't see

ASTROPHYSICAL EVIDENCE:

CMB SPECTRUM

- Observe photons from of last scattering
- Careful statistical analysis
- If DM component and LCDM, then very good agreement
- Dark component necessary



particle physics

deep underground

western china













锦屏山隧道

A

CJPL
中国地质工程集团
CHINA JIANGSU

安全驾驶
平安回家

锦屏山隧道
长17.5km

进洞前检查车辆安全

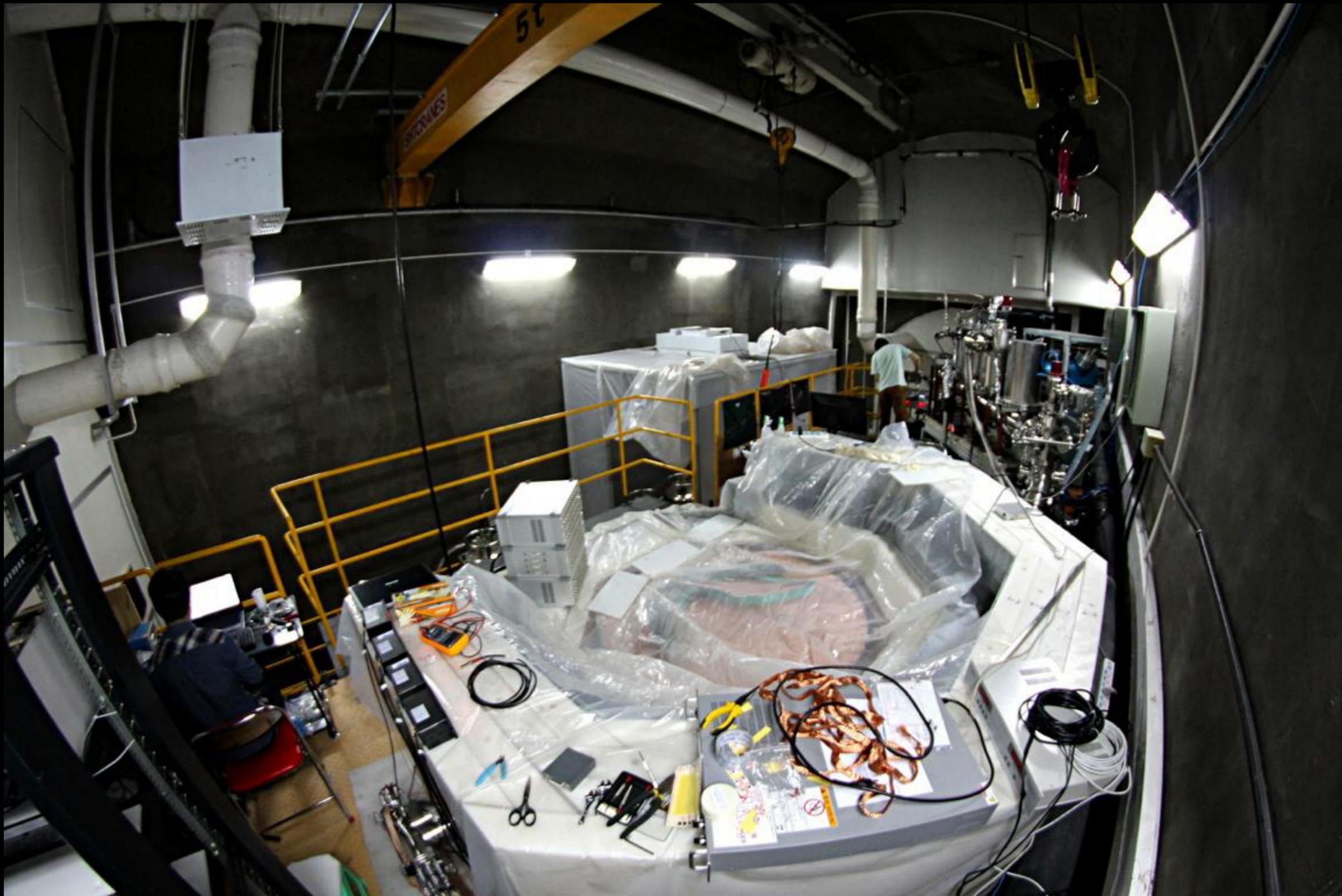
ZOOMLION 091.0V

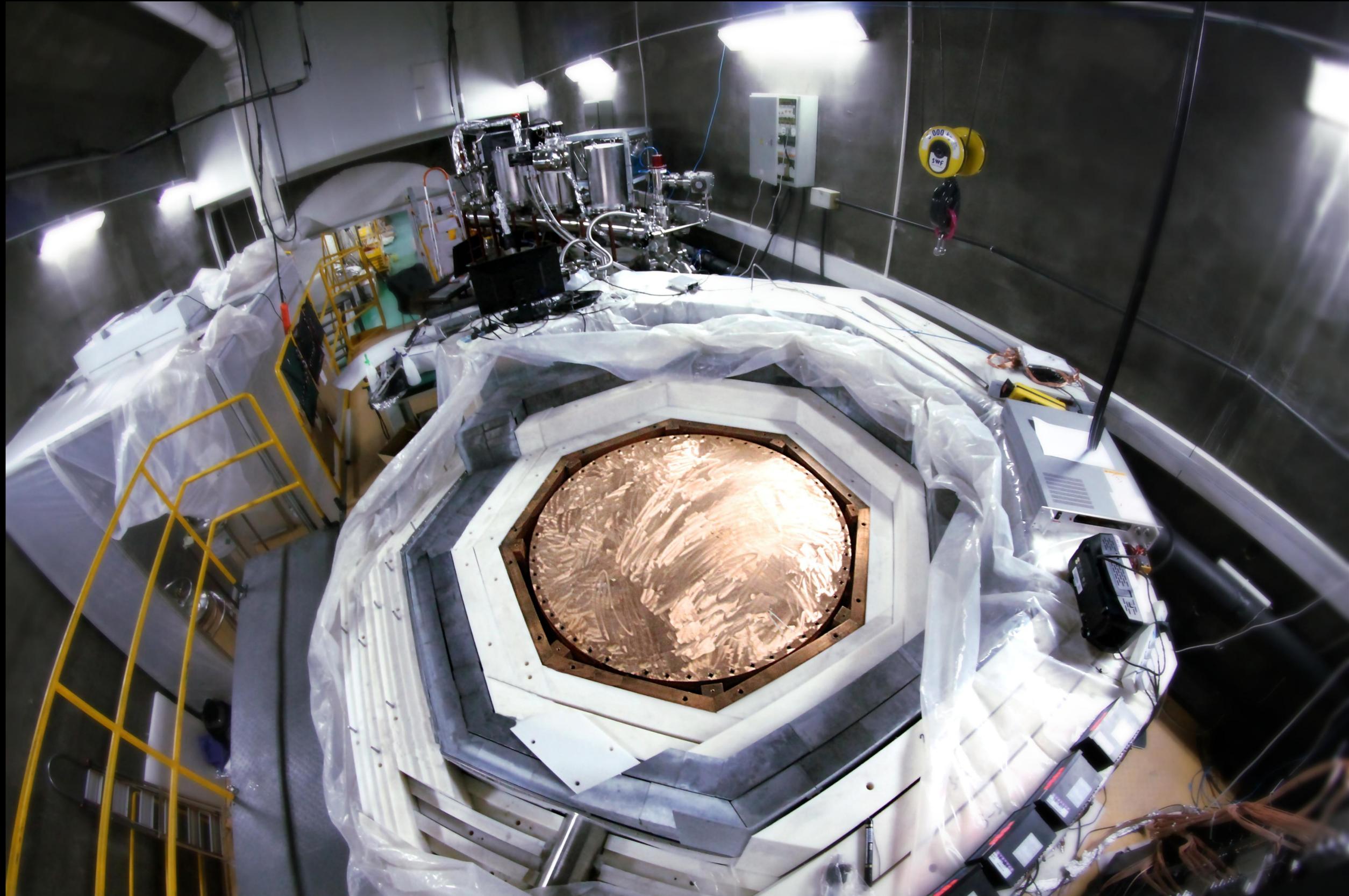




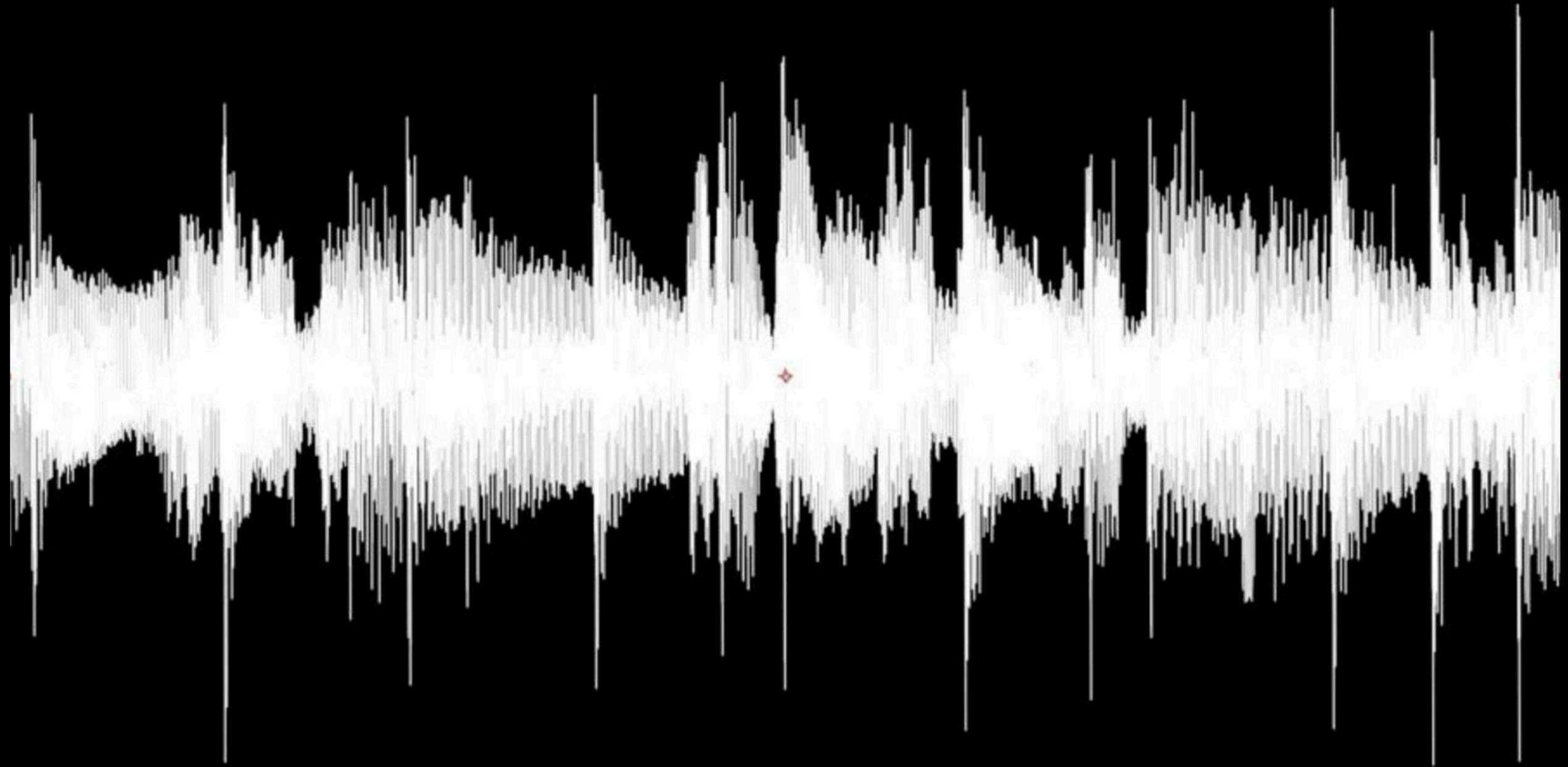




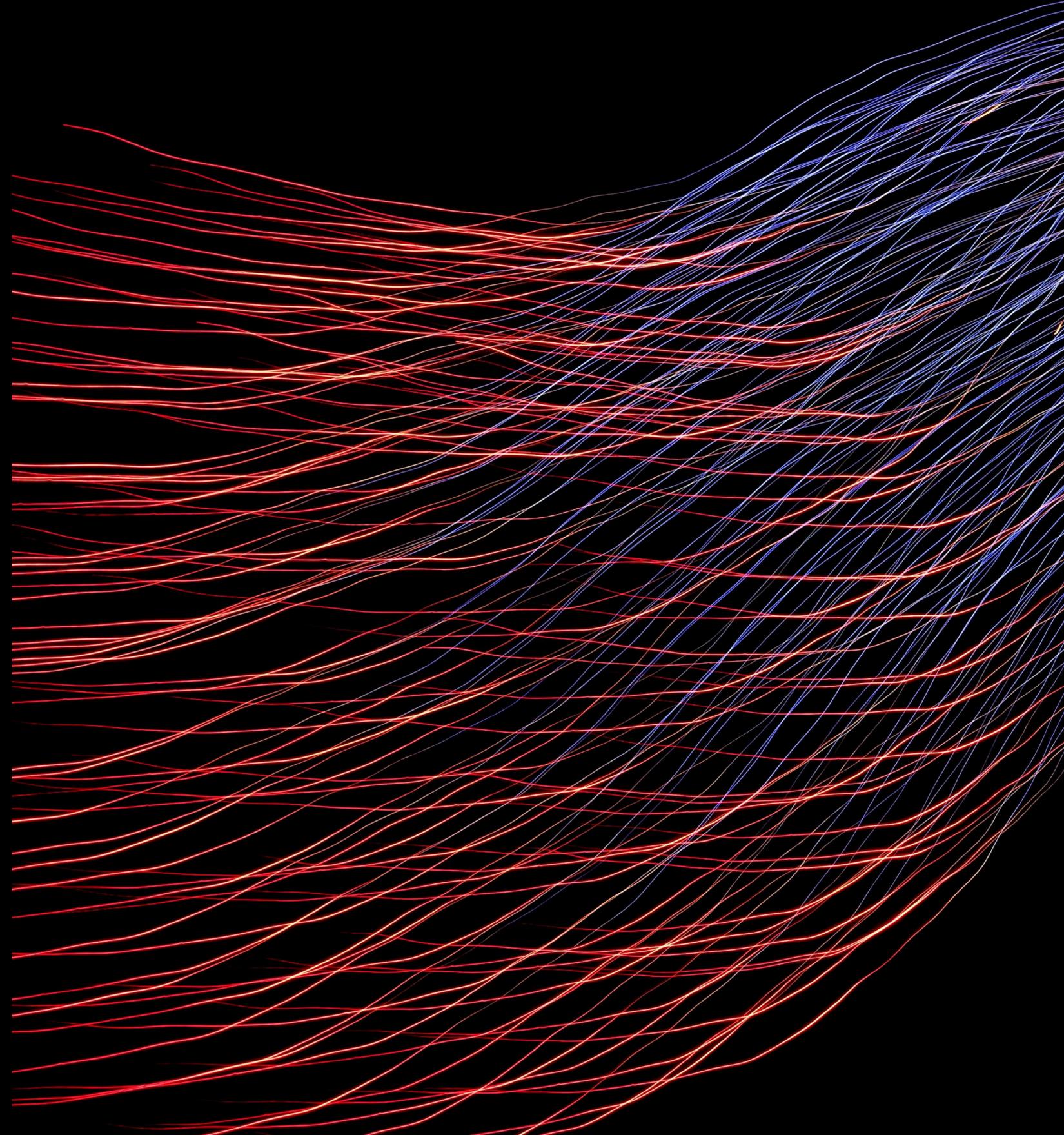




waveform data

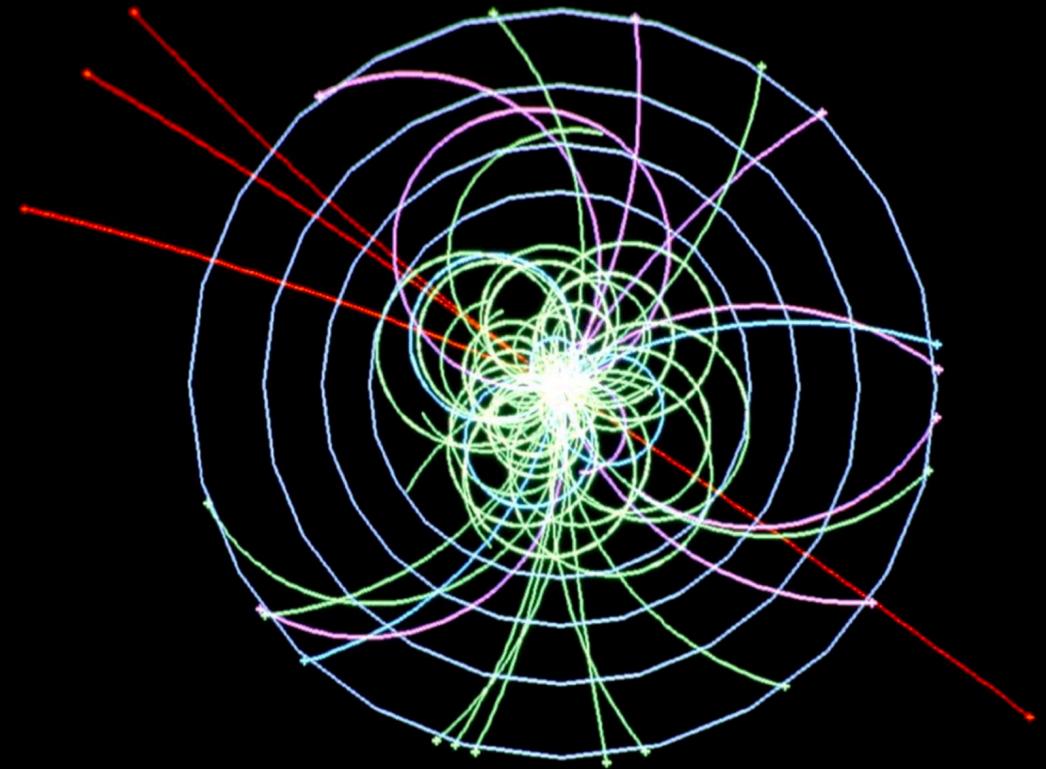


signal processing

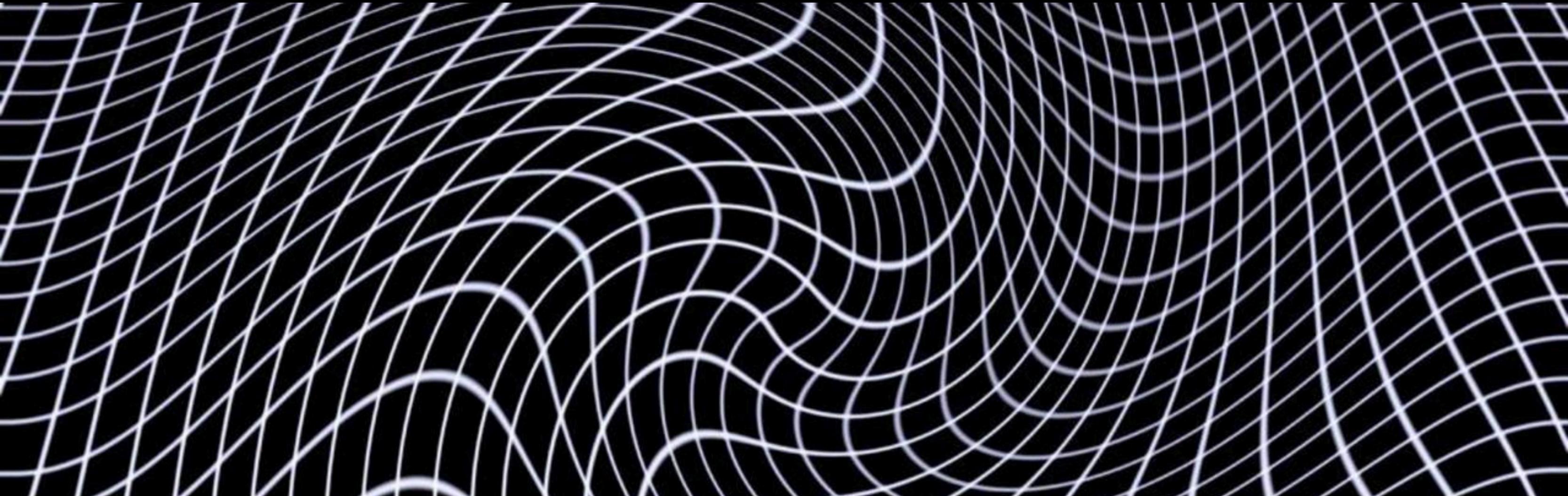


**needle in a
haystack**

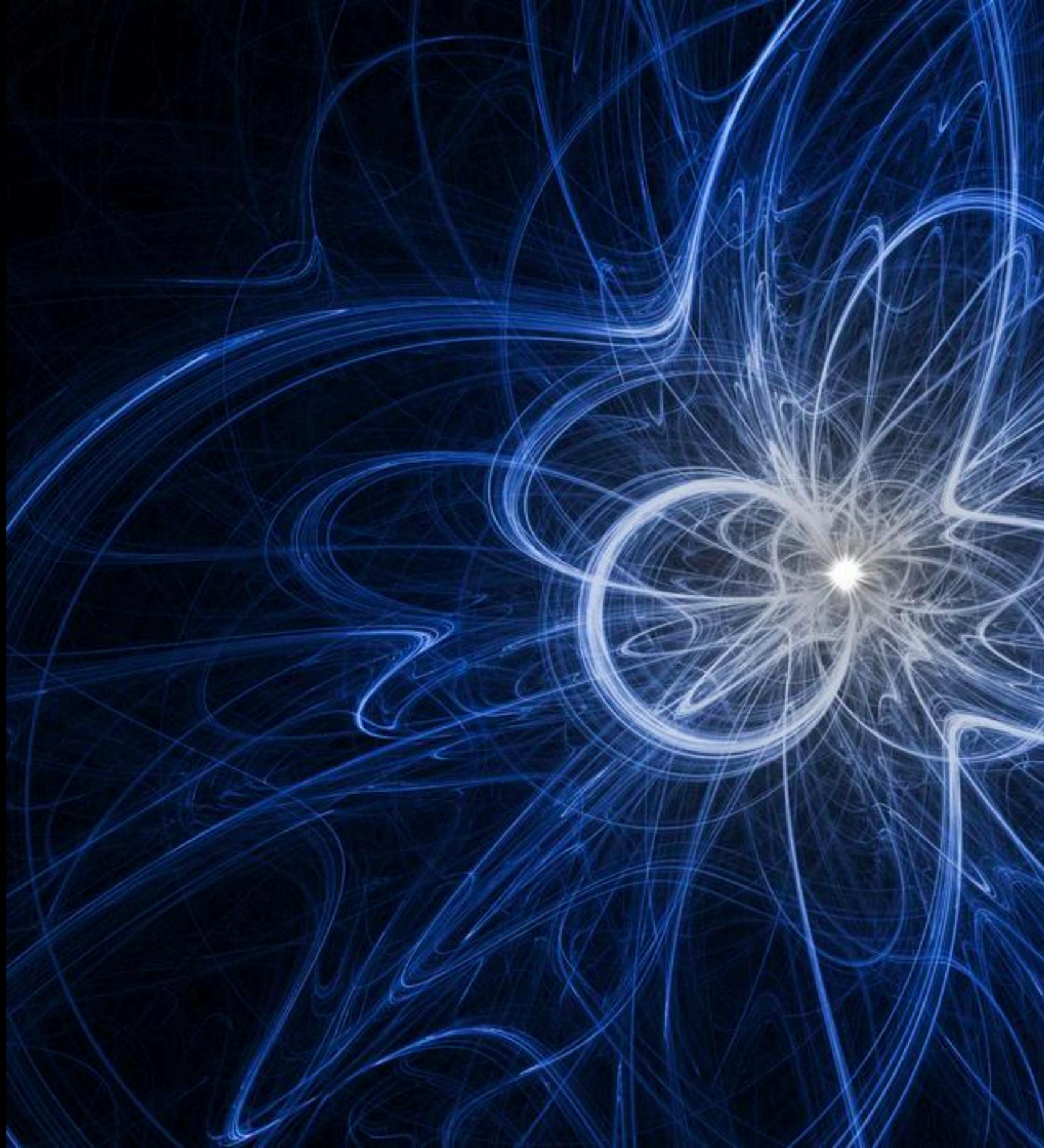
higgs boson



gravitational waves



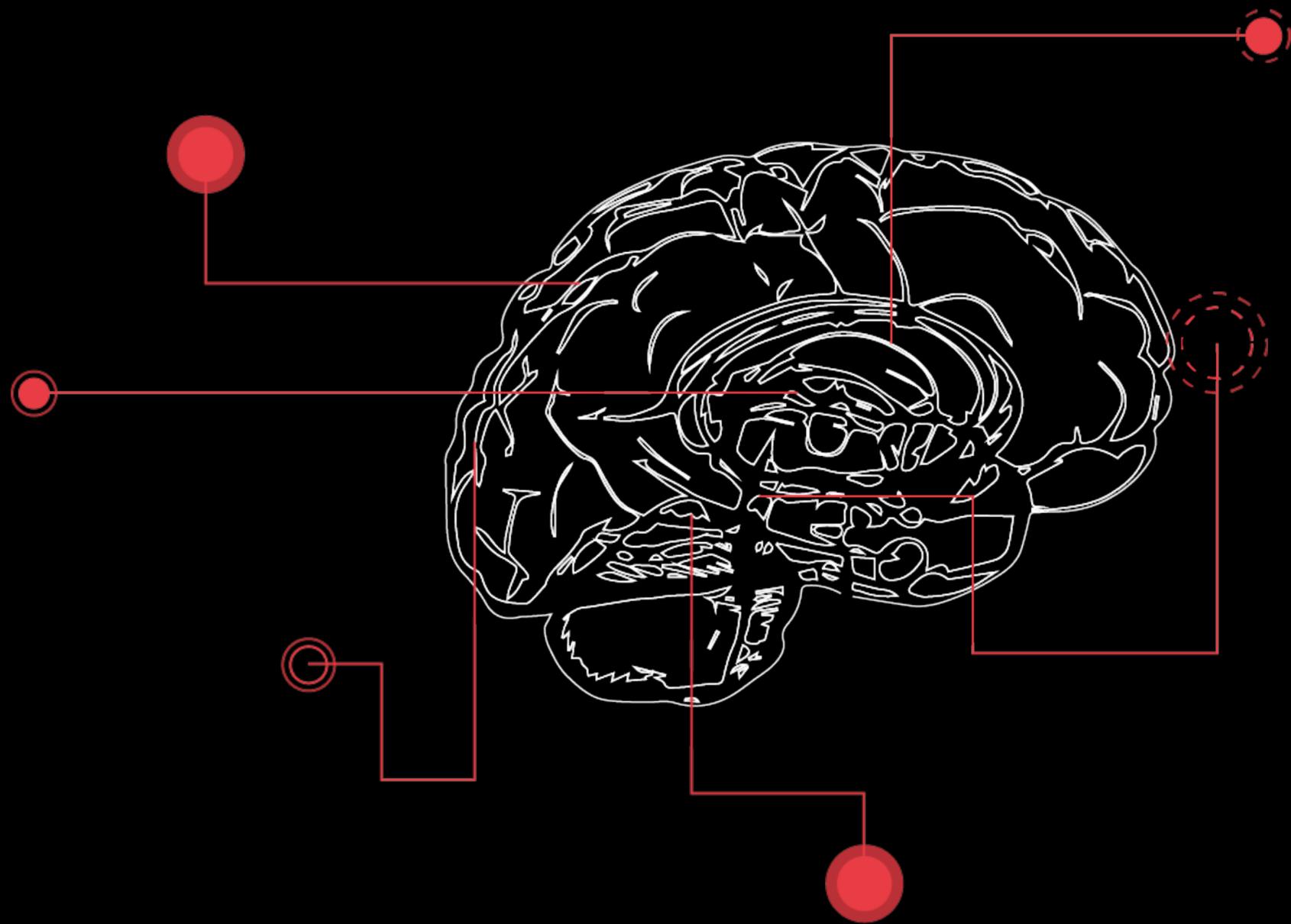
neutrinos



**DM is kinda like
neutrinos**



1 in a billion



**applied
A.I.**

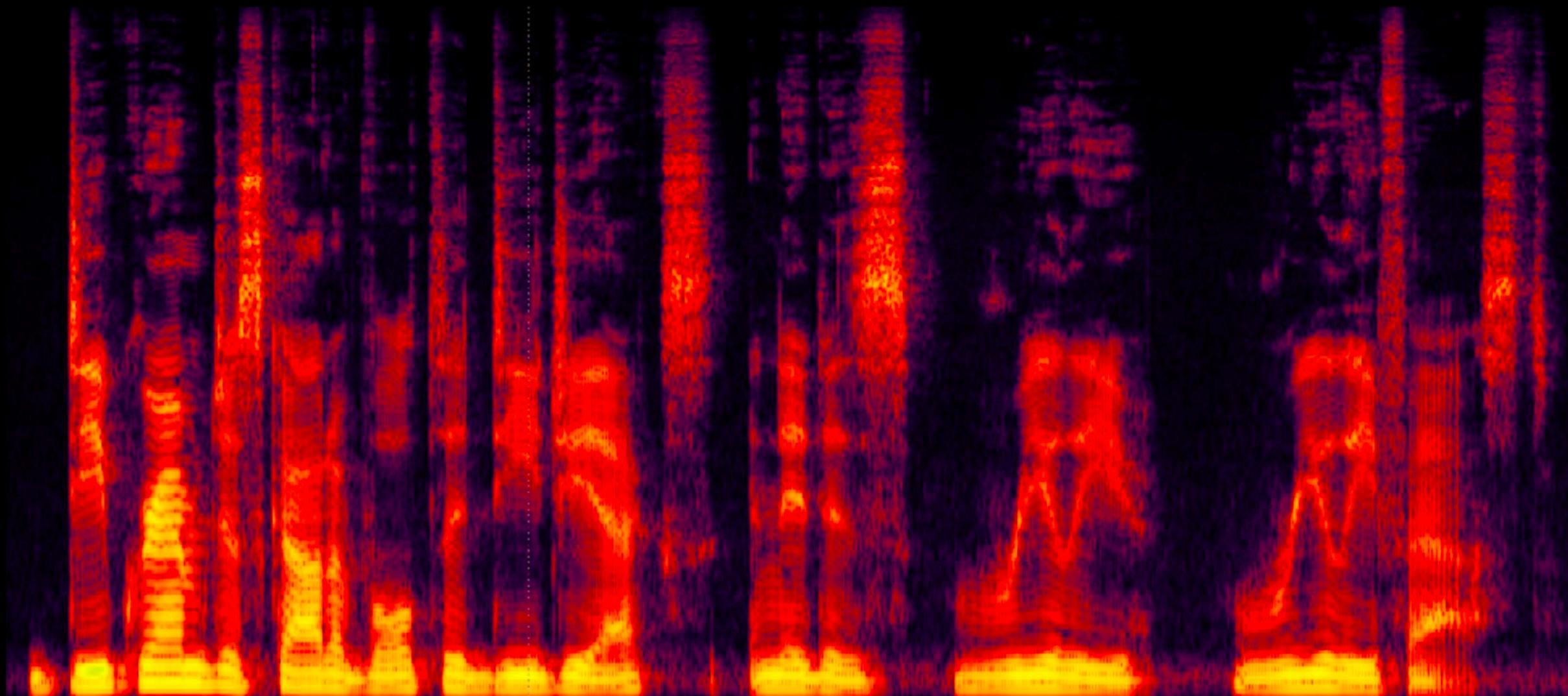
**large recorded
speech dataset**

**find interesting
moments**

transcribe speech

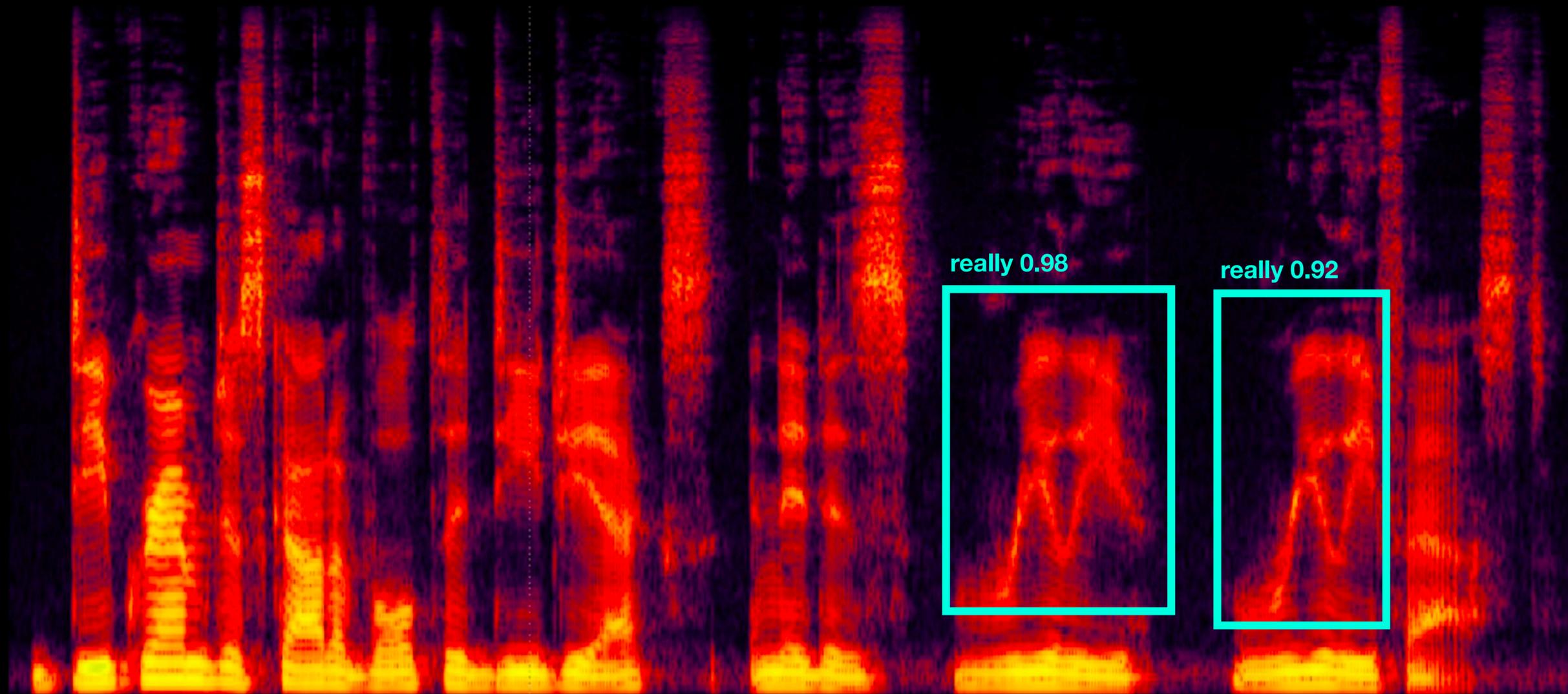


Deepgram just got a Volta DGX and it is really, really fast.



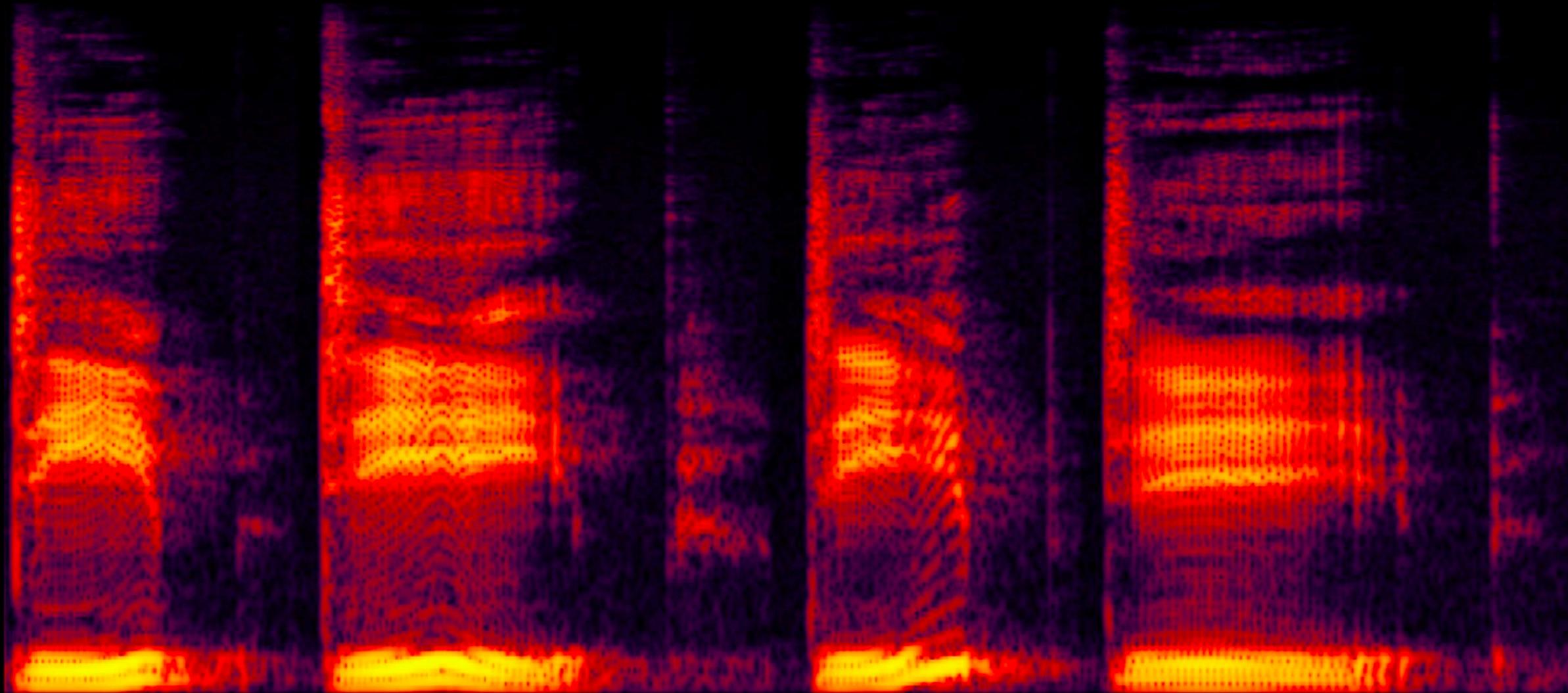
Deepgram just got a Volta DGX and it is really, really fast

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Deepgram just got a Volta DGX and it is really, really fast

The word “deep” in four ways

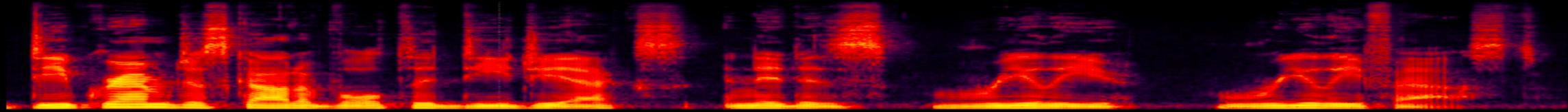


deep

deep

deep

deep



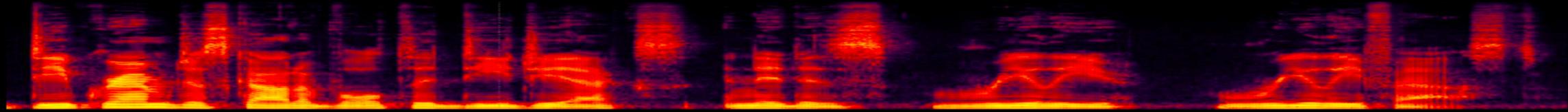
denoise

acoustic model

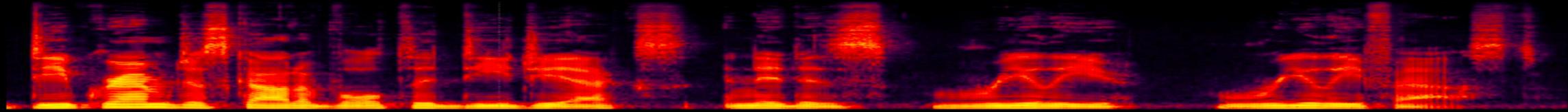
lattice

LM + beam search

~~Deepgram~~ just got a ~~Voika~~ ~~DSX~~ and it is really ~~really~~ fast



Deepgram just got a Volta DGX and it is really really fast



CNN

RNN

Deepgram just got a Volta DGX and it is really really fast

language
vocabulary
environment
audio compression
microphone
male/female
young/old
accents

**what can a human
do?**

A person wearing a brown sweater is sitting at a wooden desk, typing on a laptop. The scene is dimly lit, with light coming from a window in the background. The person's hands are positioned on the keyboard, and the laptop screen is open. The overall atmosphere is quiet and focused.

NON REALTIME:

95% word accuracy

**what else can a
human do?**

transcription
timing/confidences
speaker recognition
emotion detection
search
topic modeling

The background features a dark, almost black, field with a complex pattern of glowing, wavy lines. The lines are primarily orange and red, with some blue and green accents, creating a sense of depth and movement. The lines appear to be composed of small, bright segments, giving them a digital or fiber-optic appearance. The overall effect is one of a dynamic, interconnected network or data flow.

**this is what
we build**

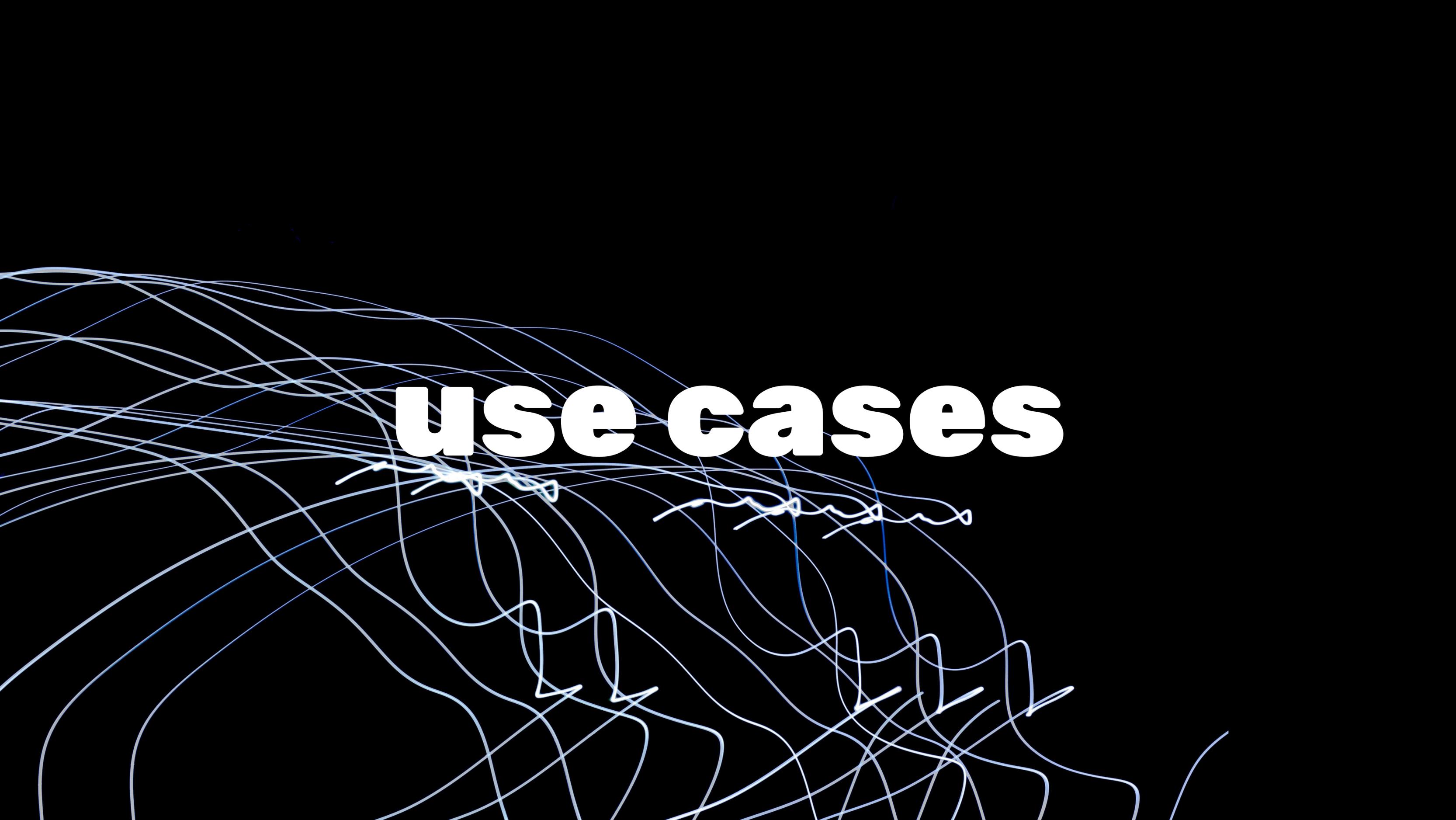
20% better
accuracy

10x faster latency

100x faster
throughput

half the price

we do it with GPUs



use cases



meetings



**customer
support**



sales

customers

ONE OF THE LARGEST

ridesharing apps



1,000,000
minutes
transcribed

over
85,000 calls
processed

ONE OF THE LARGEST

**unified
communications
companies**



ONE OF THE LARGEST

collaborative meetings companies

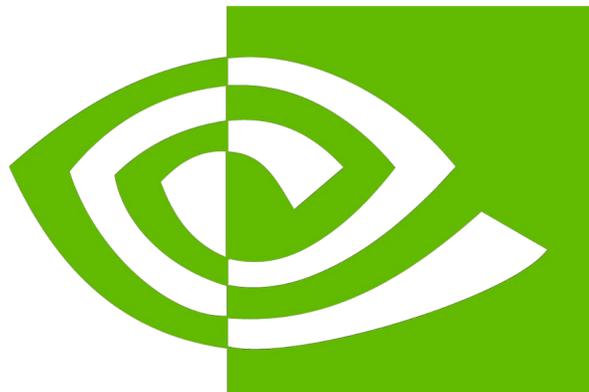


hundreds of meetings
transcribed

**do an evaluation
with us**



Combinator



nVIDIA



DC

DEEPGRAM

UNDERSTAND HUMAN SPEECH