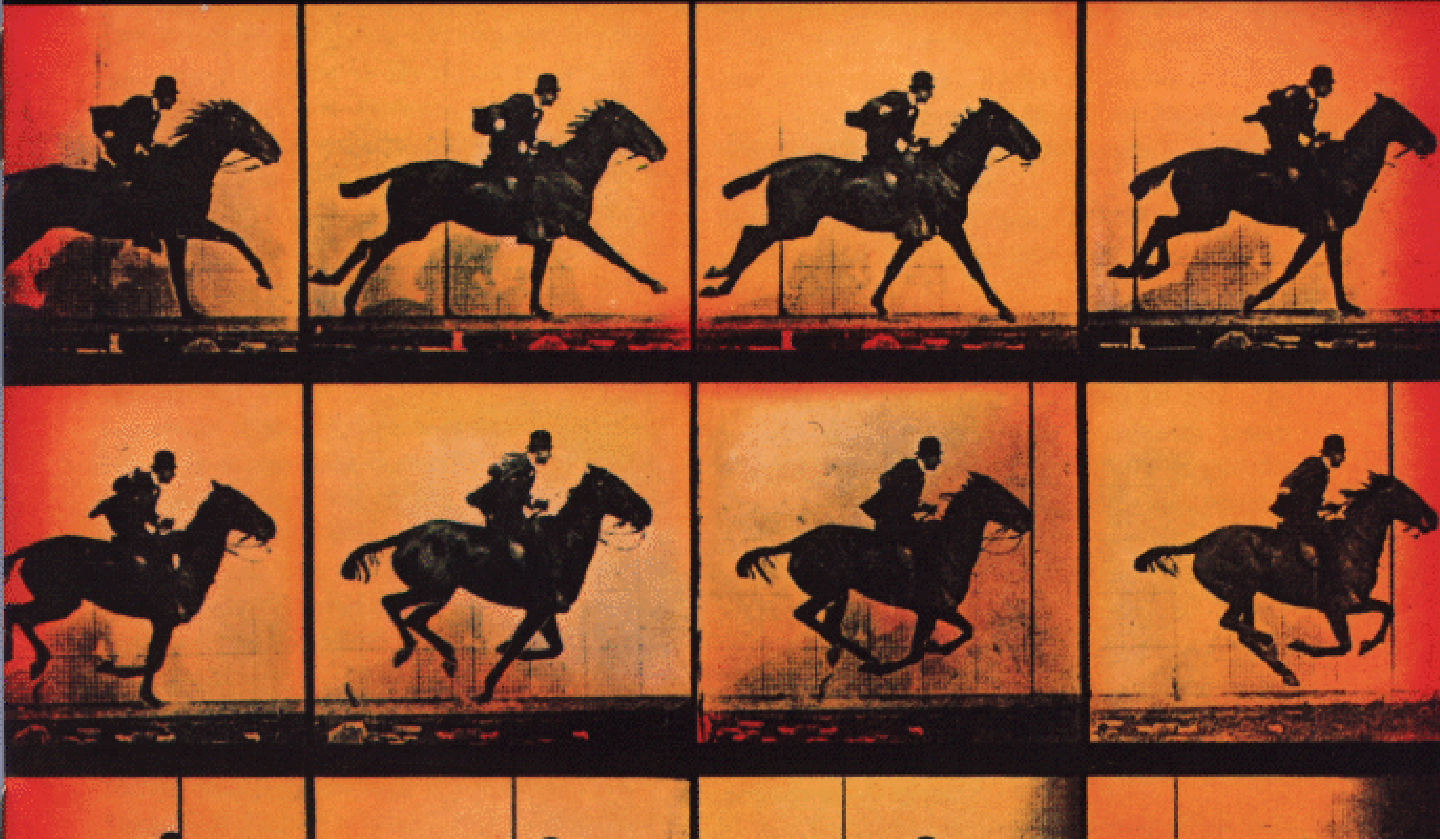
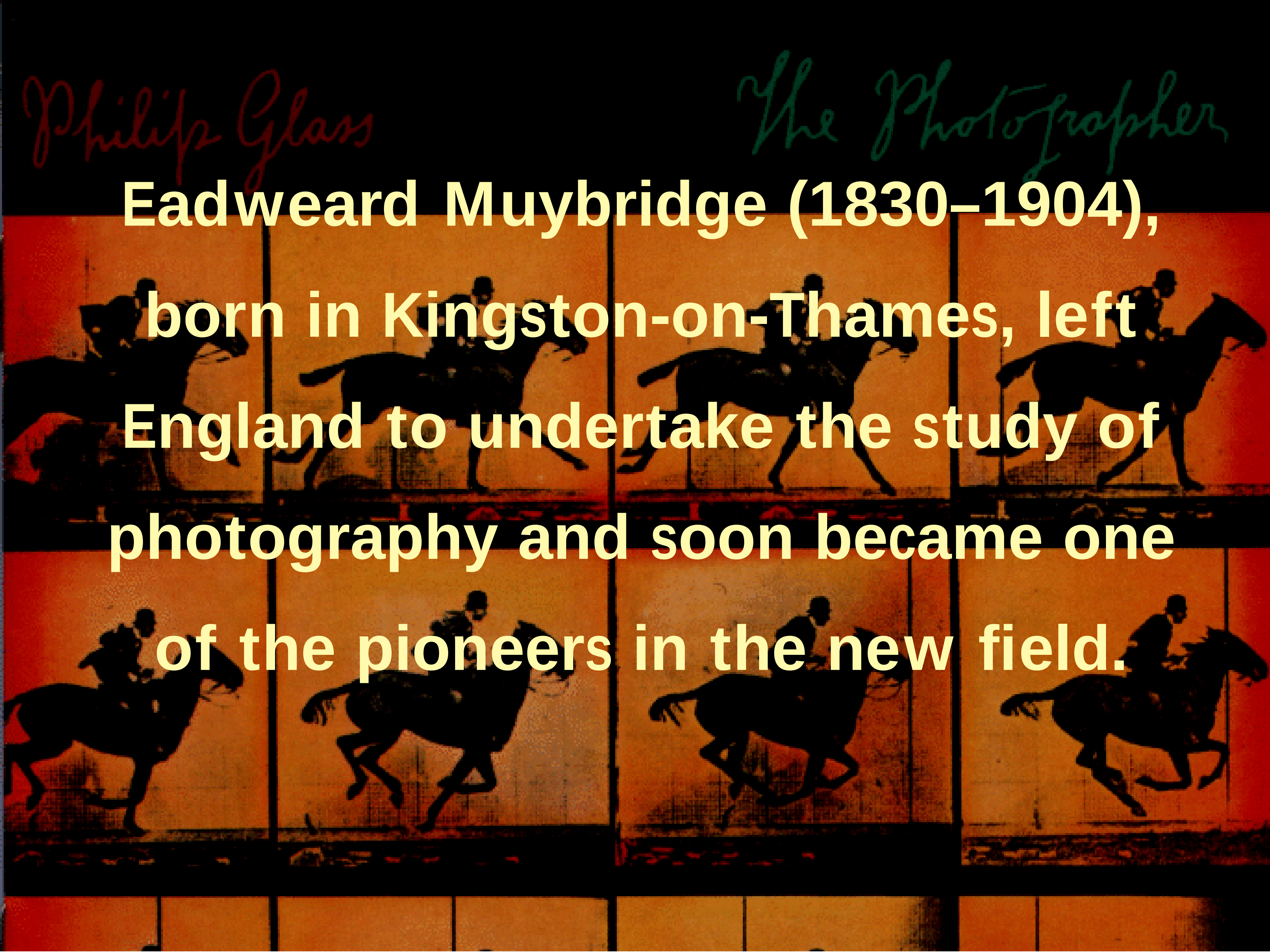
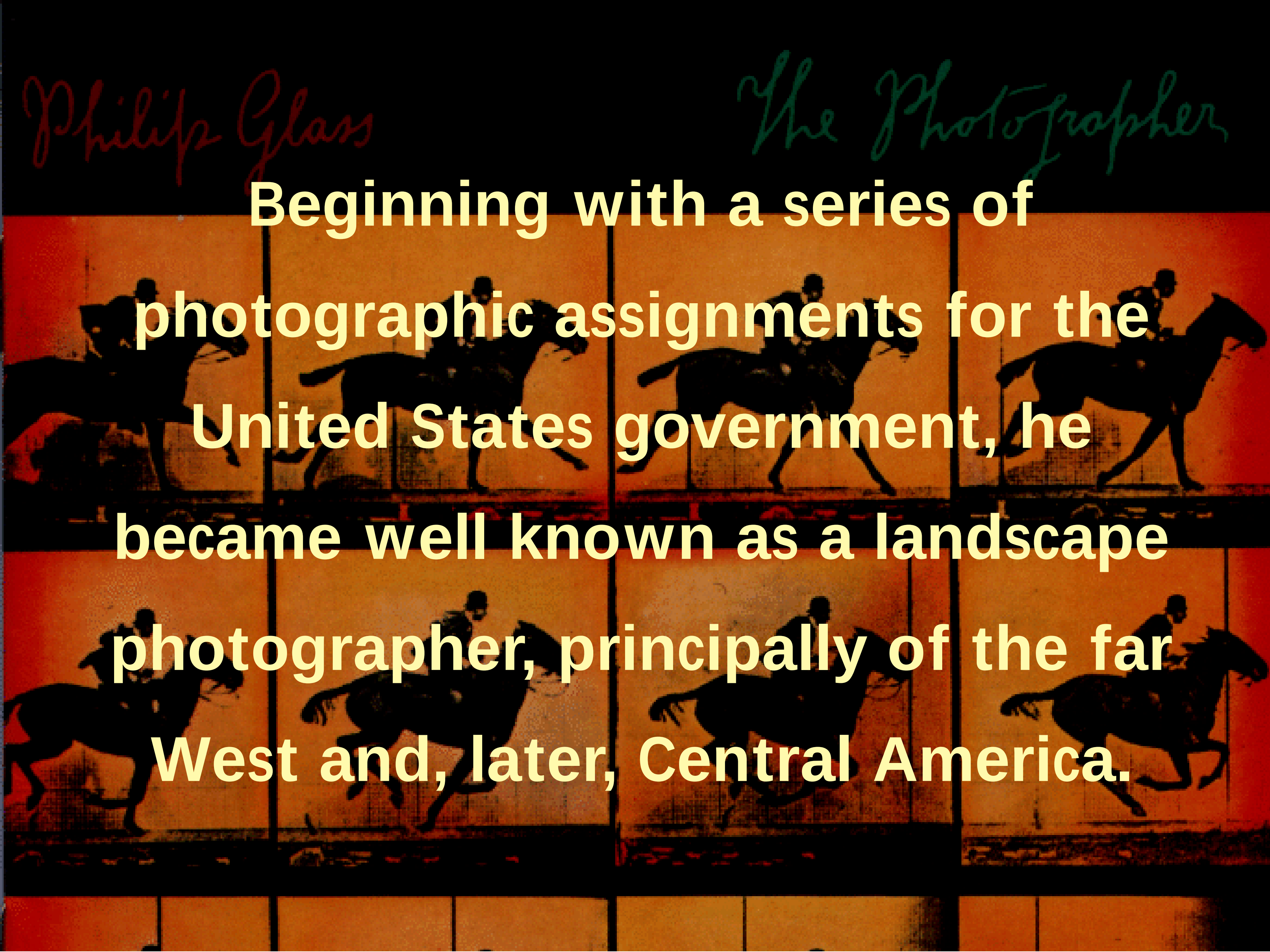
Philip Glass

The Photographer

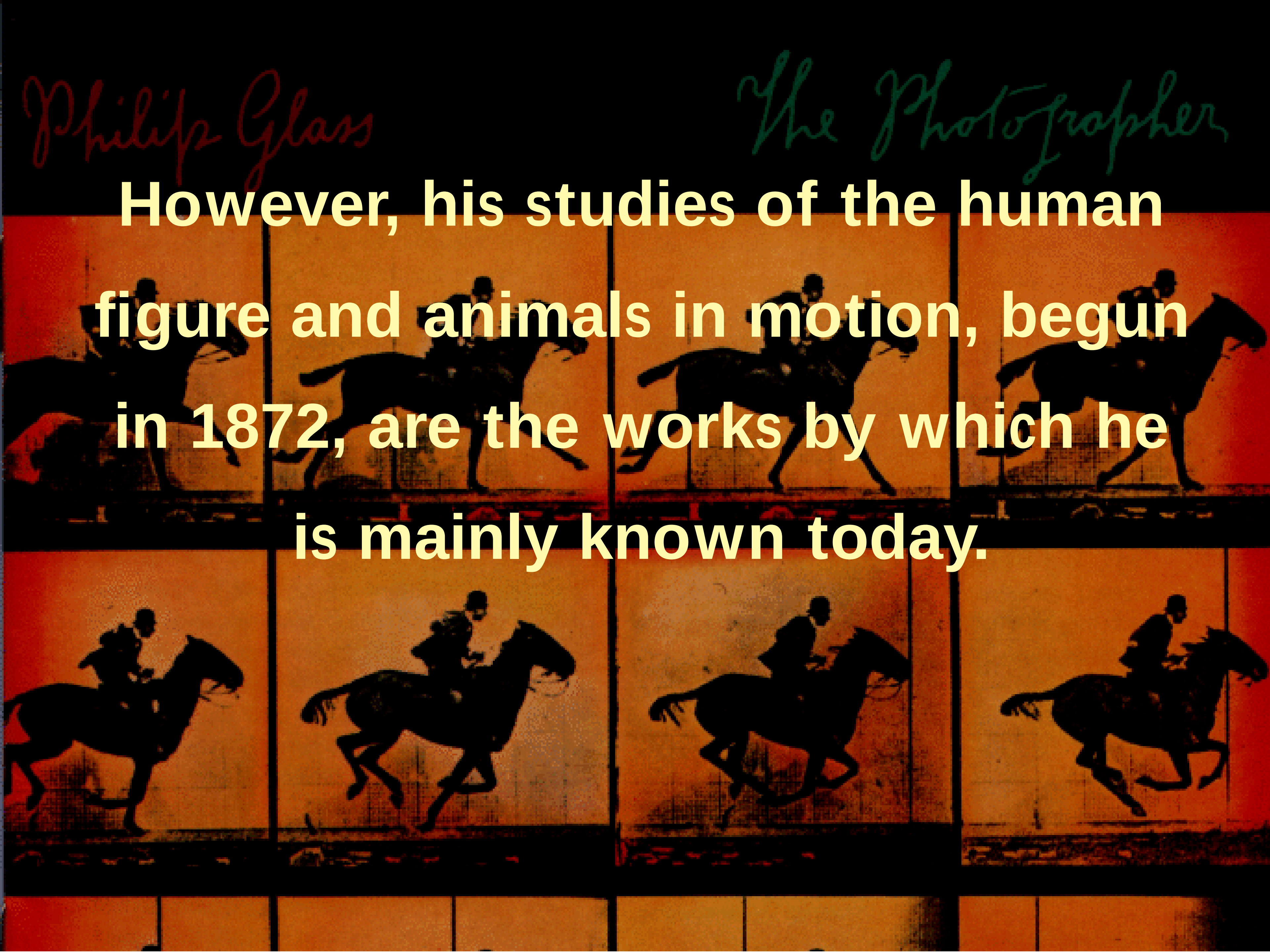



Philip Glass
The Photographer

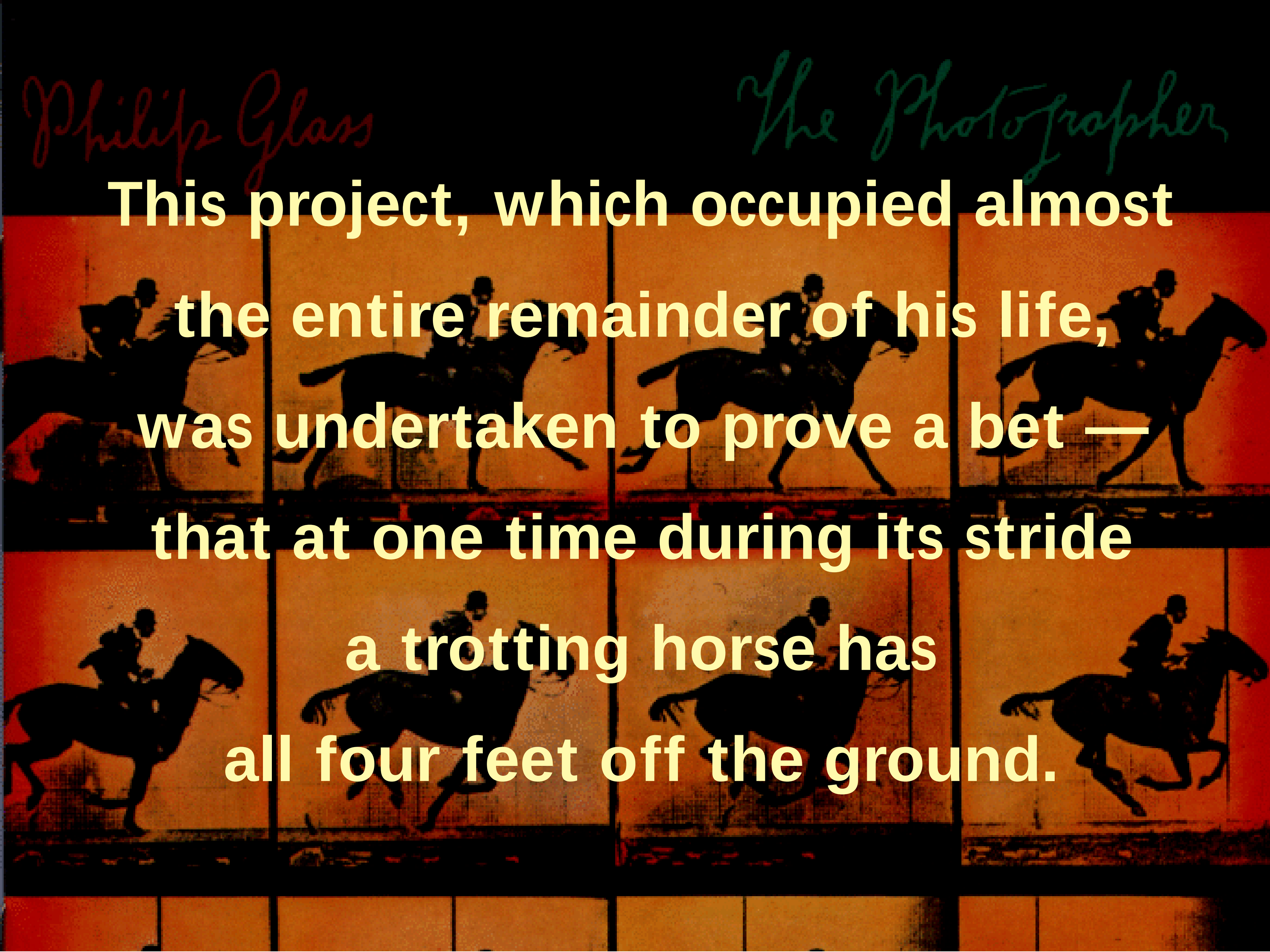
Eadweard Muybridge (1830–1904), born in Kingston-on-Thames, left England to undertake the study of photography and soon became one of the pioneers in the new field.


Philip Glass
The Photographer

Beginning with a series of photographic assignments for the United States government, he became well known as a landscape photographer, principally of the far West and, later, Central America.


Philip Glass
The Photographer

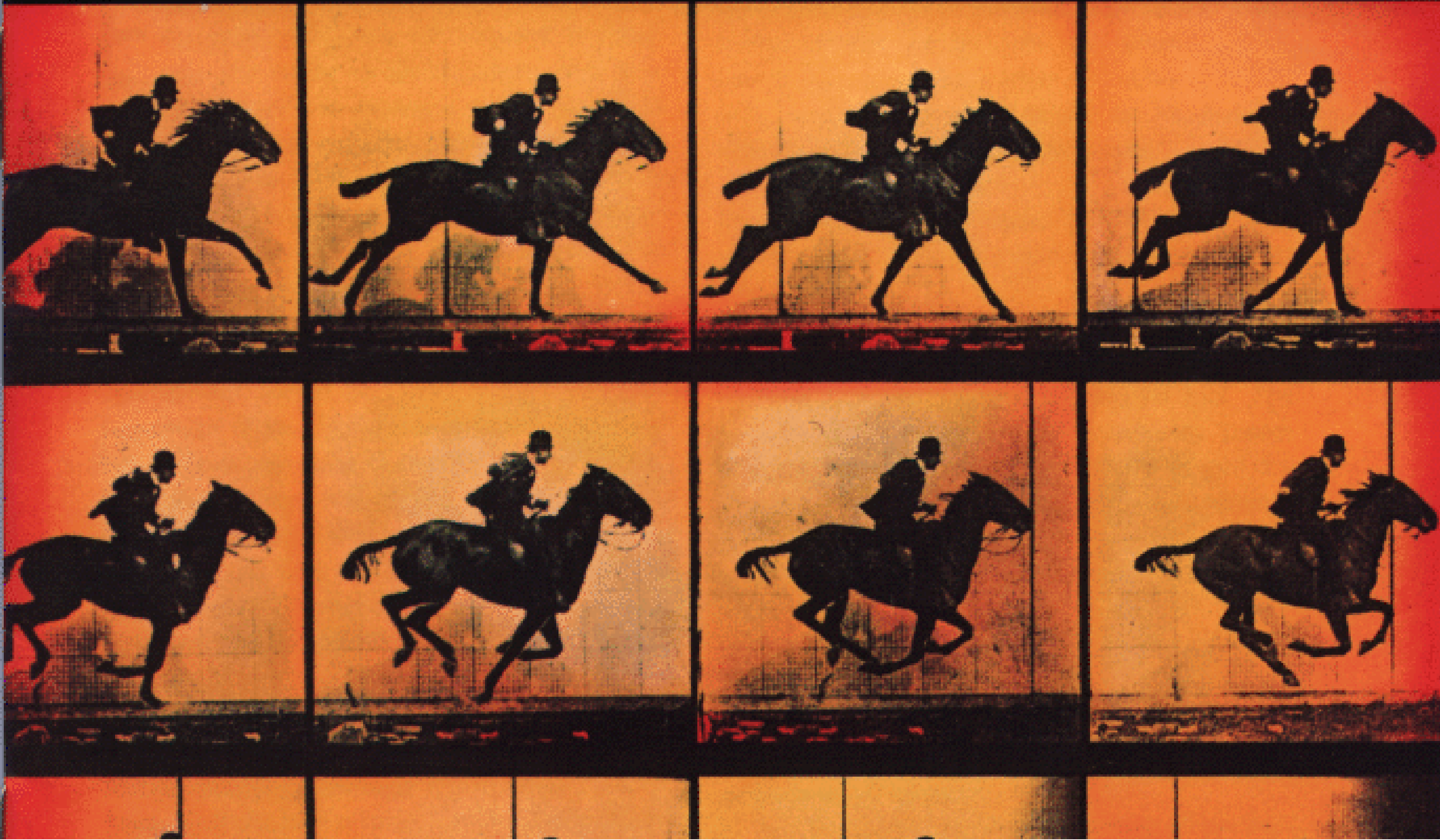
However, his studies of the human figure and animals in motion, begun in 1872, are the works by which he is mainly known today.


Philip Glass
The Photographer

This project, which occupied almost
the entire remainder of his life,
was undertaken to prove a bet —
that at one time during its stride
a trotting horse has
all four feet off the ground.

Philip Glass

The Photographer



Stopping Time

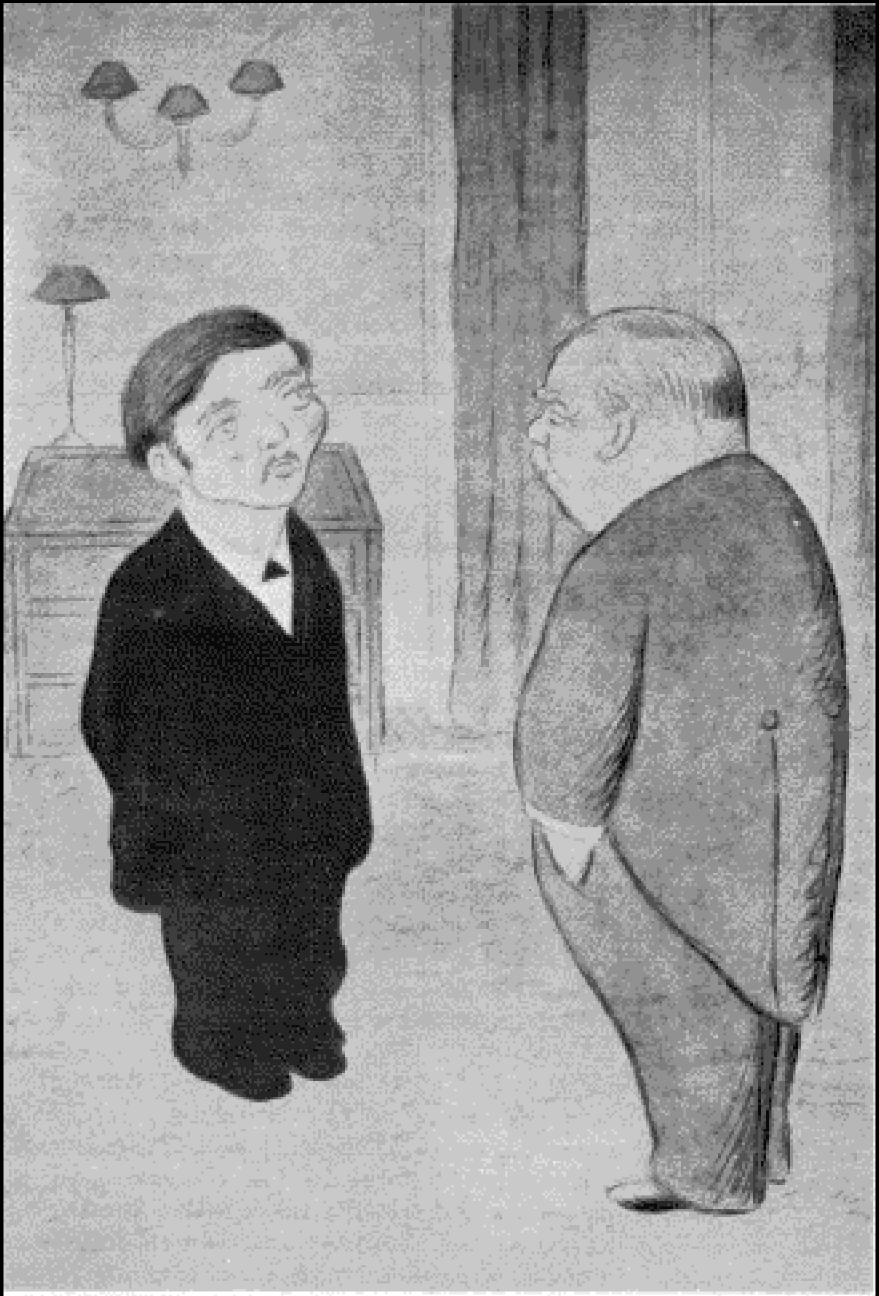
Stopping Time

Eric Mazur

Stopping Time

Eric Mazur

Museum of Science
6 October 200



t

- **time**

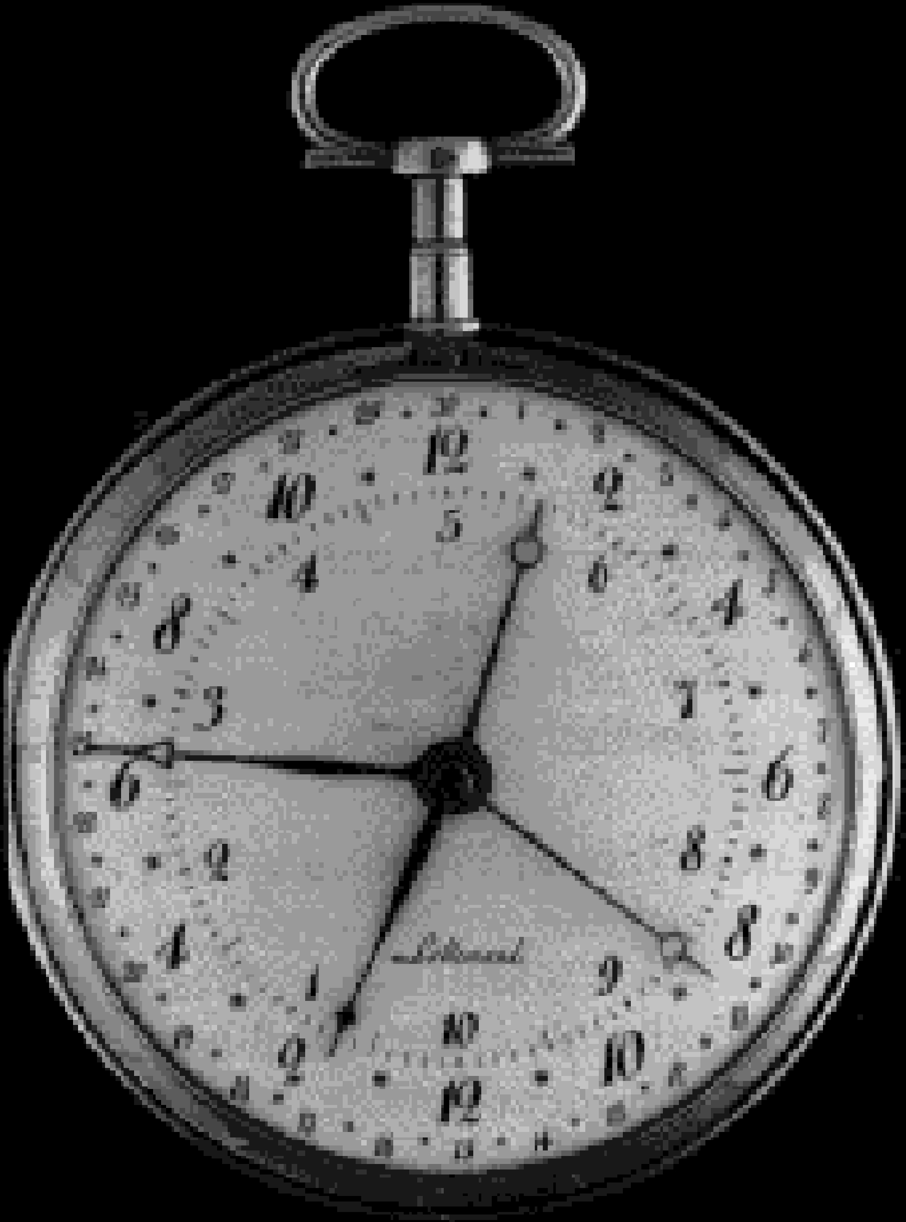
- time
- time

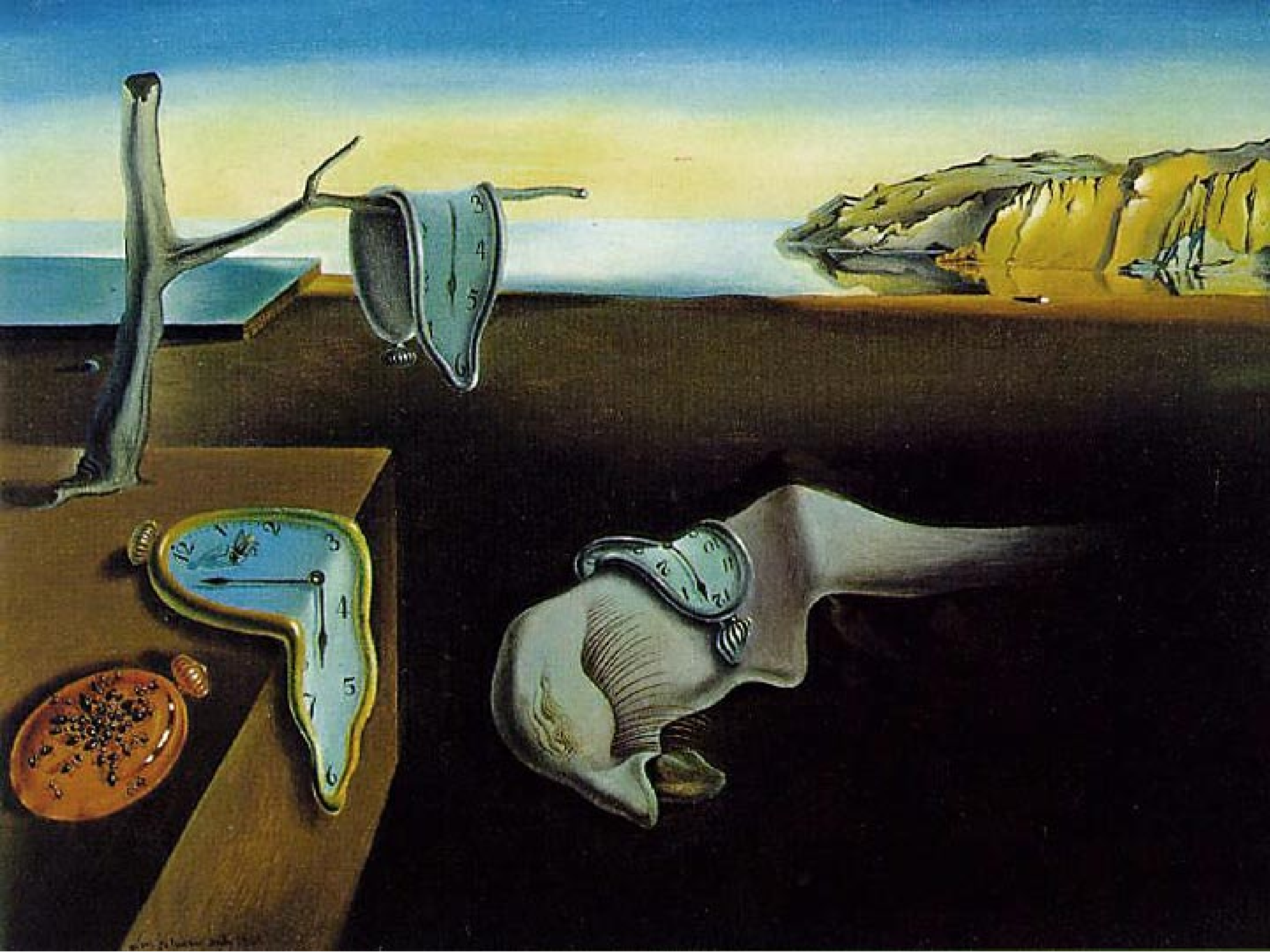
- time
- time
- time

- **time: the concept**
- **time**
- **time**

- **time: the concept**
- **time: stopping it**
- **time**

- time: the concept
- time: stopping it
- time: the new frontier





vorher angestellten Versuchen die warme Lufthülle, welche die Kerzenflamme umschließt. Und der

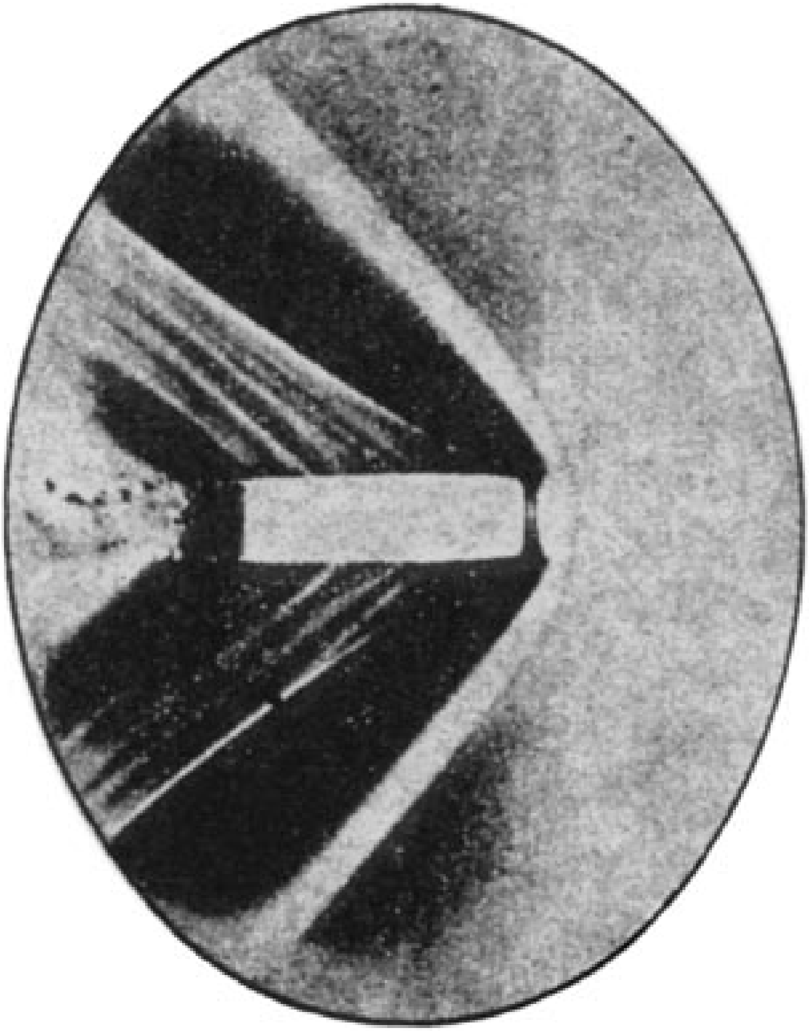
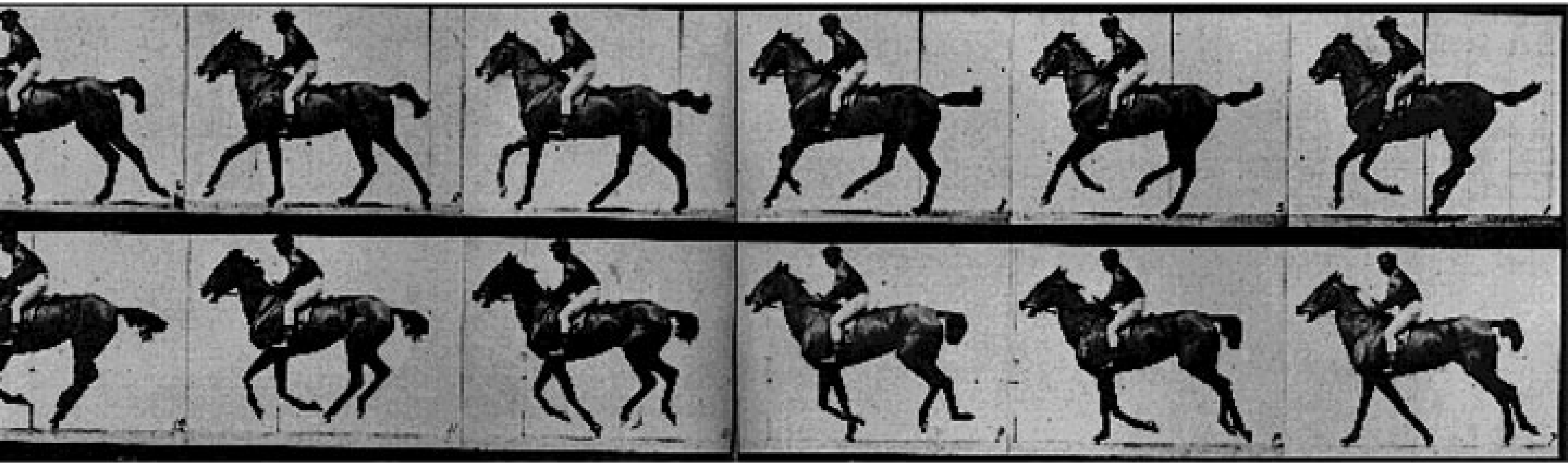
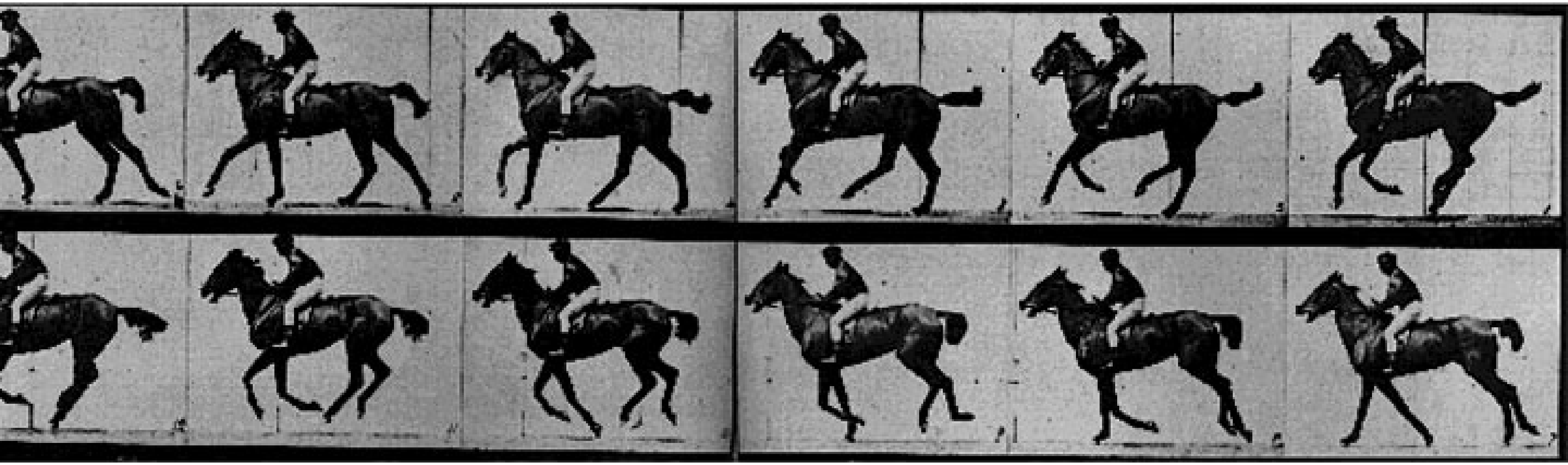
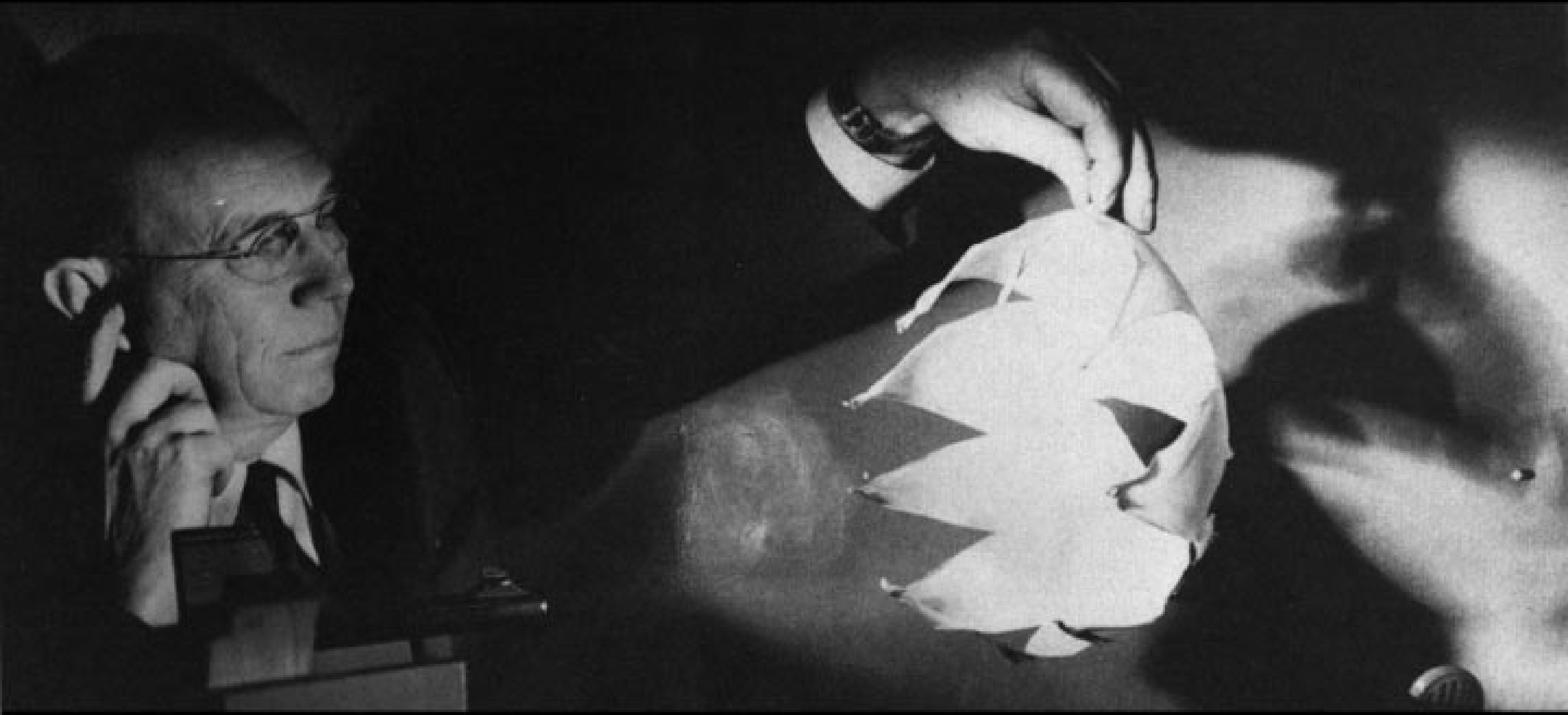


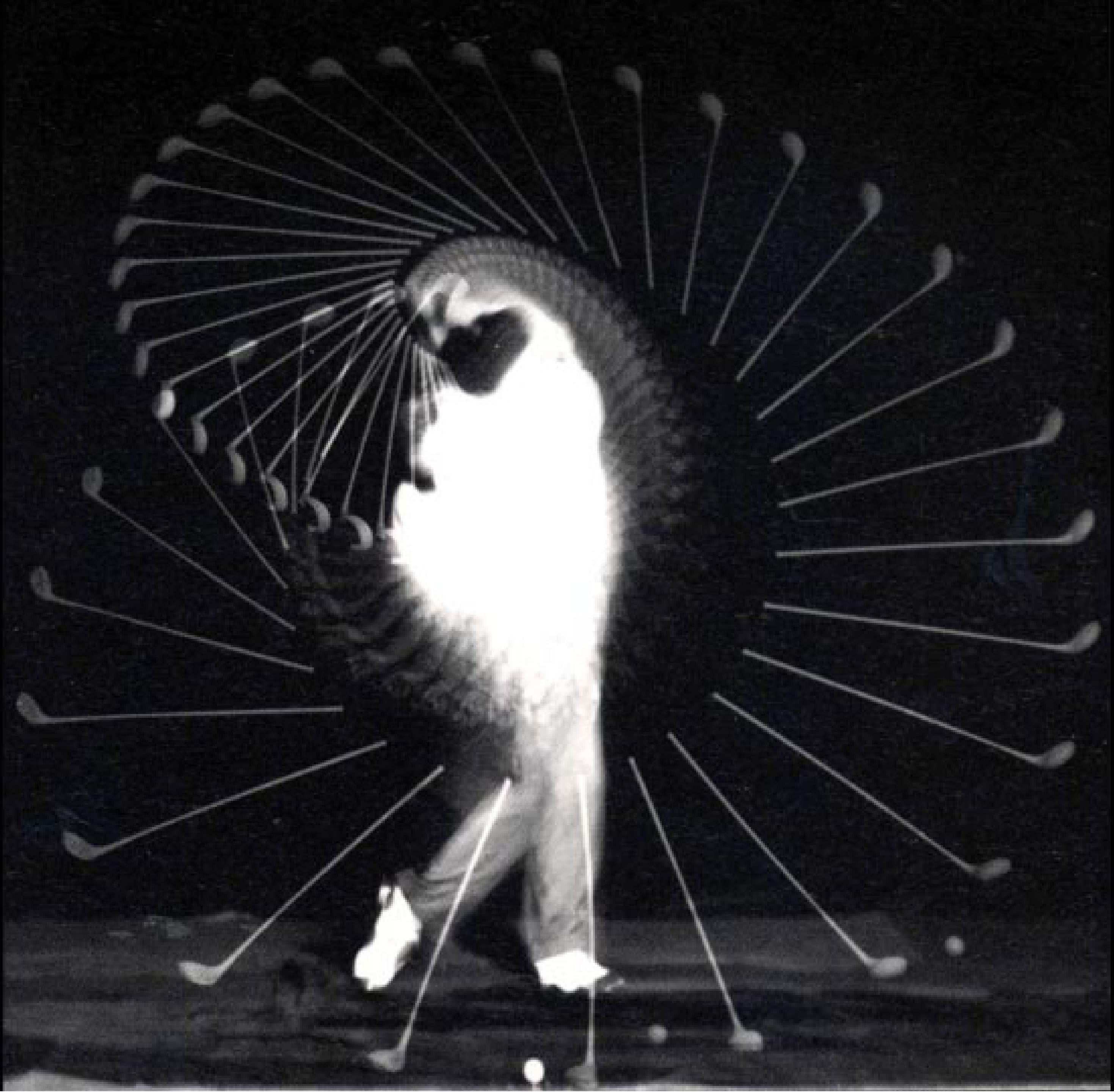
Fig. 52.

Zylinder aus durch Reibung erwärmter Luft, welche das Projektil in Form von Wirbelringen abgestreift









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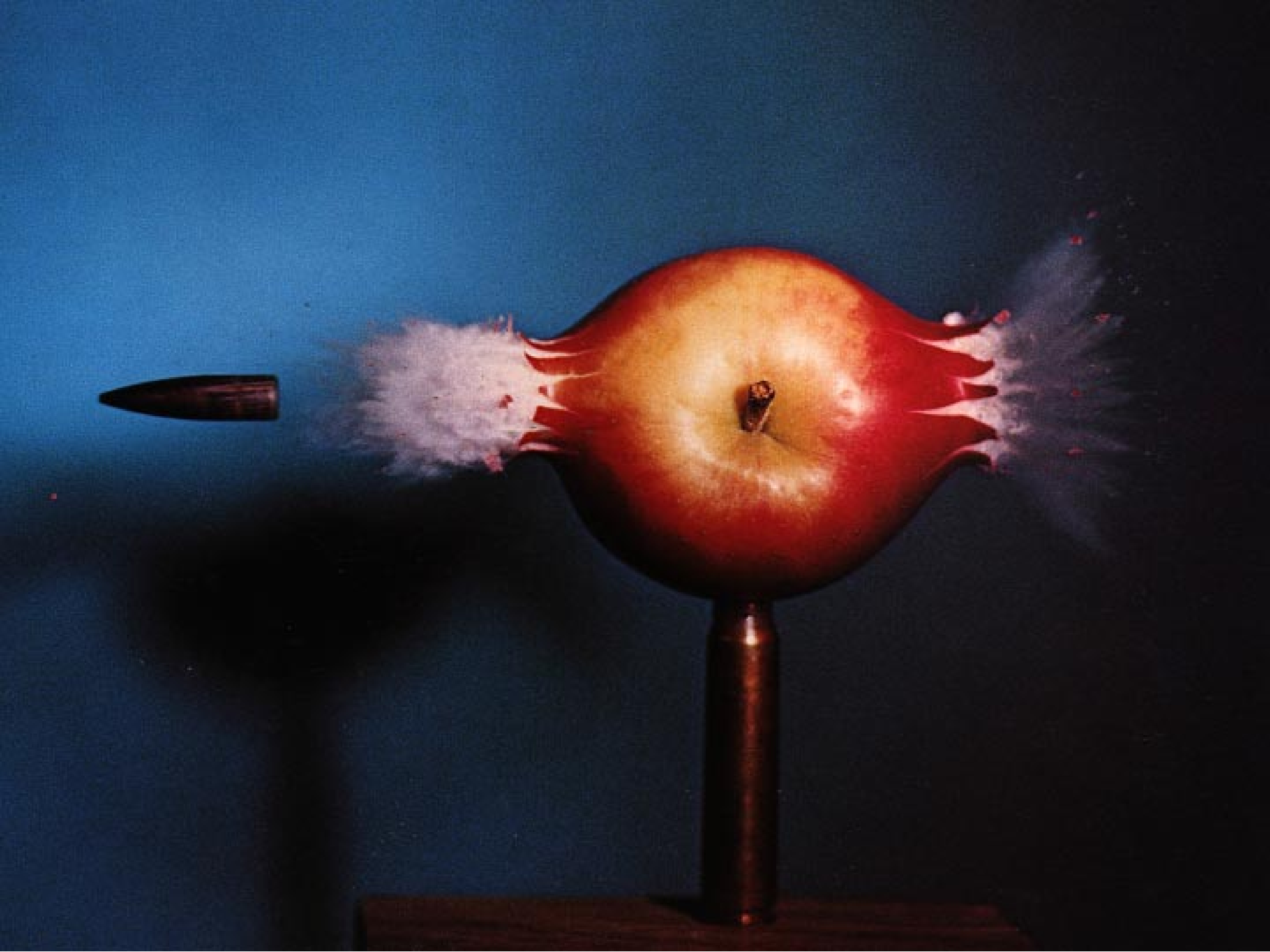
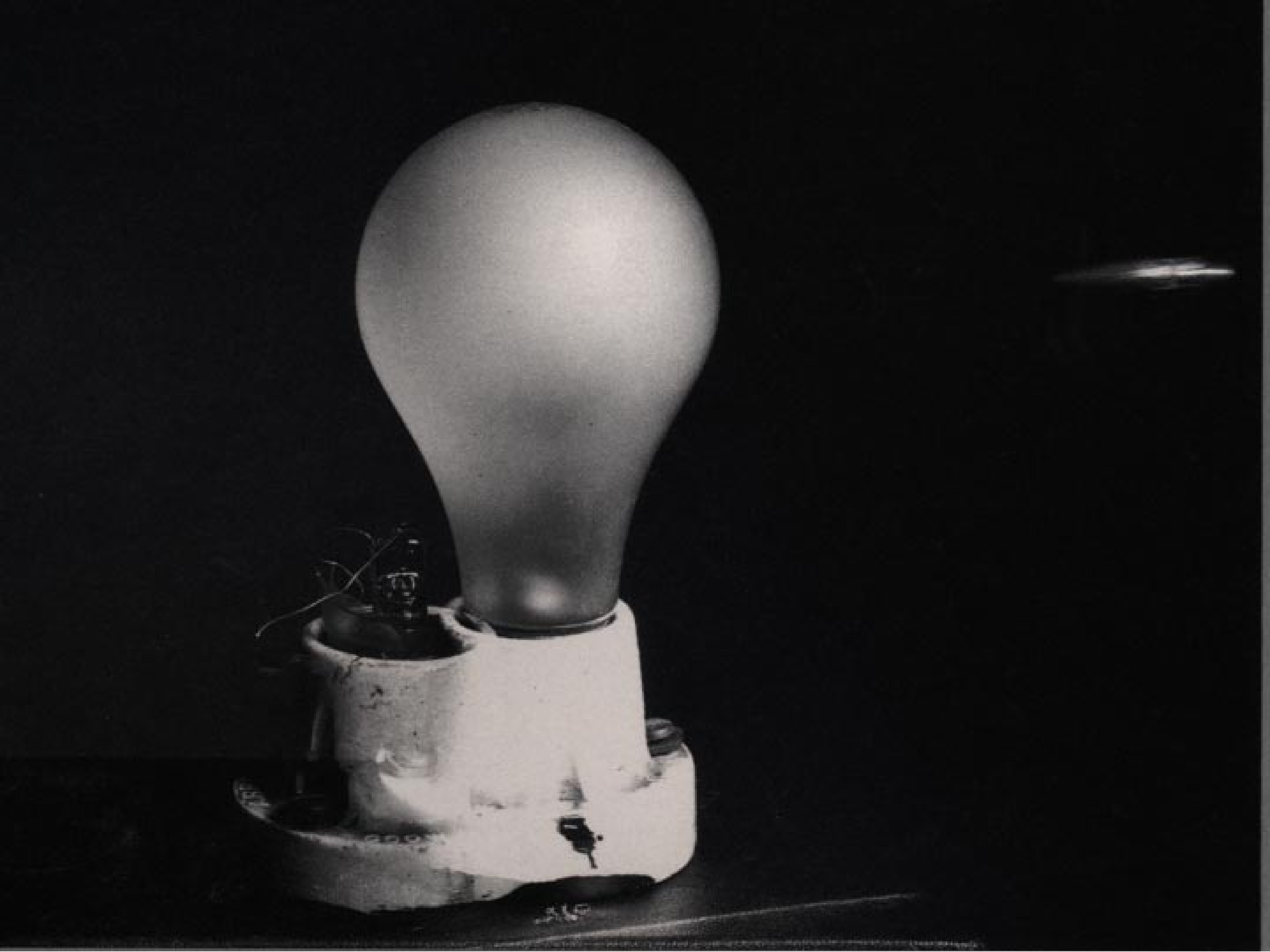
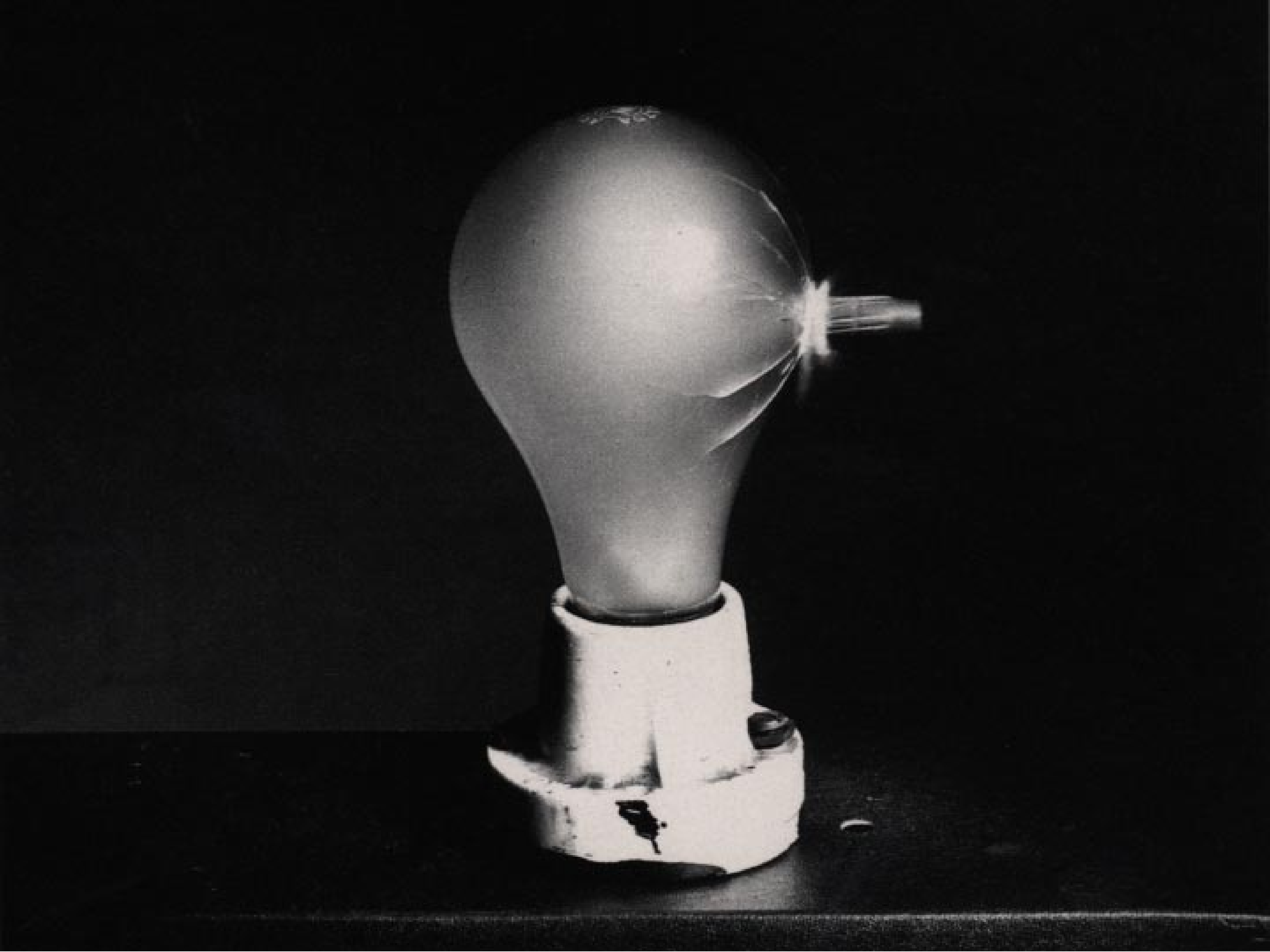
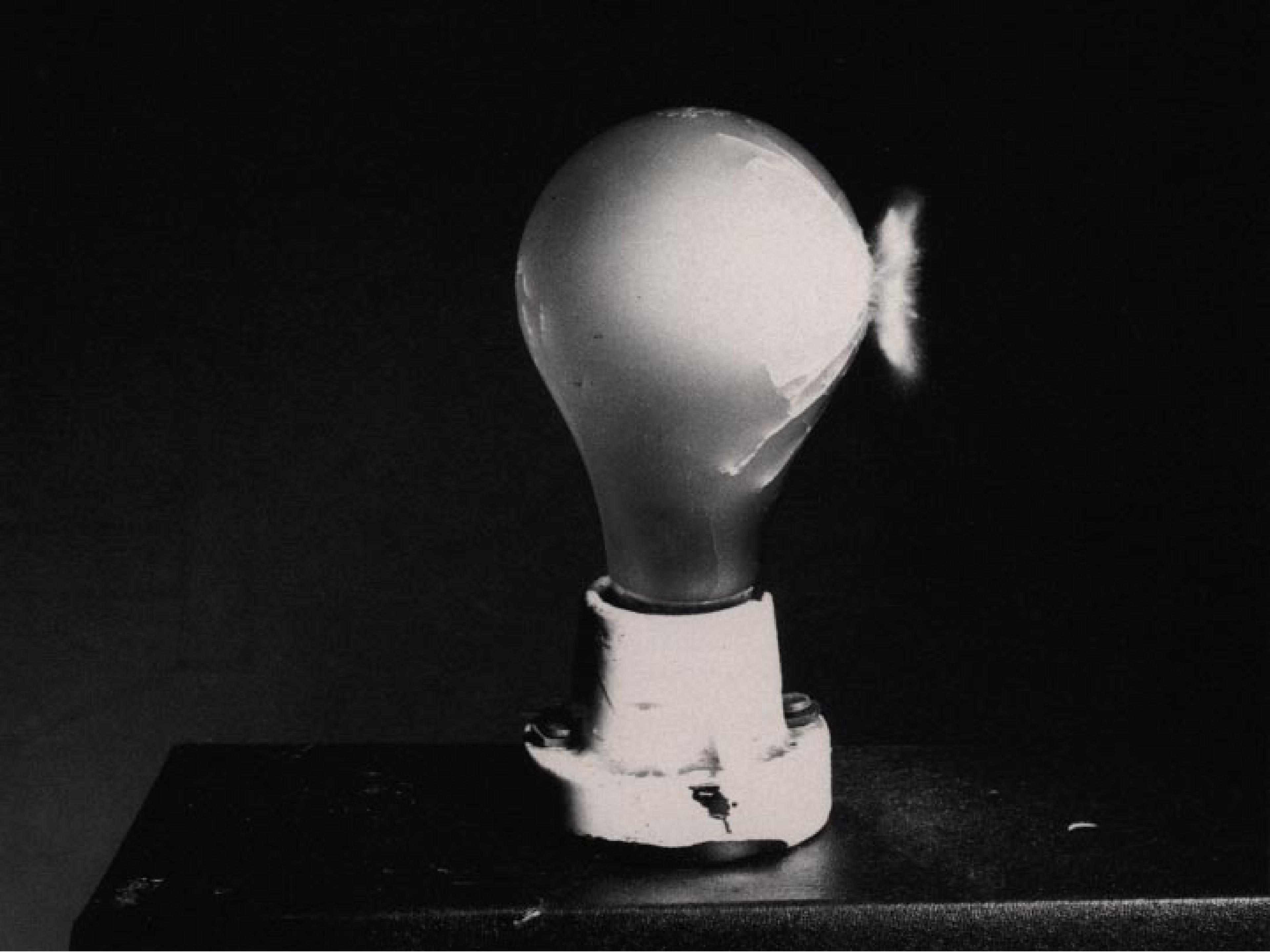
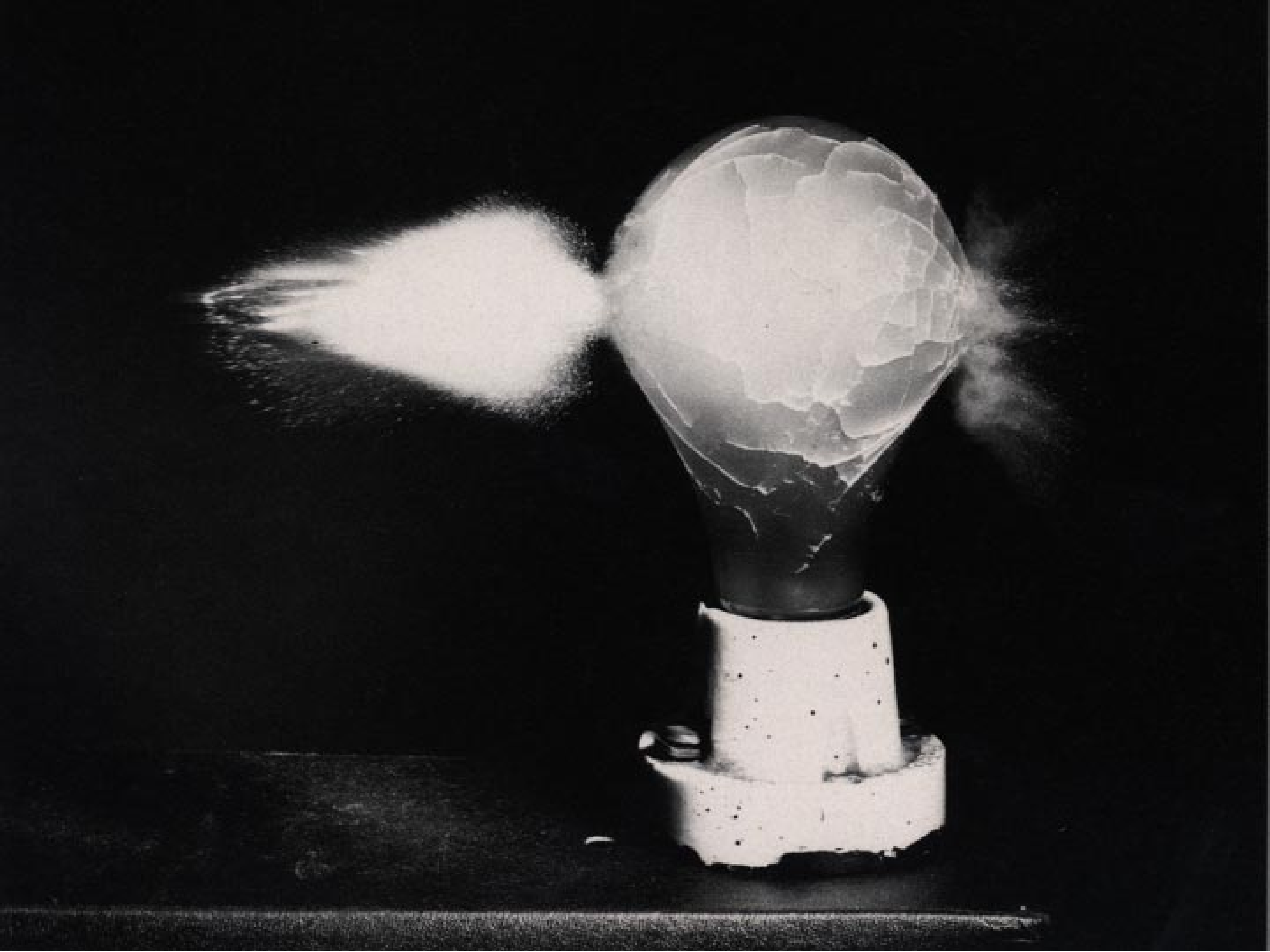
K











moon

10^0 s

60
55
5
50
10
45
15
40
20
35
25
30
trackmaster
1/5

one second

moon

10^0 s

60
5
10
15
20
25
30
35
40
45
50
55
30
3
6
9
12
15
18
21
24
27
trackmaster
⅕

one second

moon

10^0 s

one second

moon

10^0 s

one second

moon

10^0 s

one second

10^1 s

709
483
VISA
ENVOY
GMAC

10 seconds

10^1 s

709
483
VISA
ENVOY
GMC

10 seconds

10^1 s

10 seconds

10^1 s

10 seconds

10^1 s

10 seconds

10^2 s

one minute

10^2 s

one minute

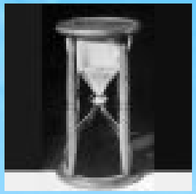
10^2 s

one minute

10^2 s

one minute

10^2 s



one minute

RT to sun

10^3 s

17 minutes

RT to sun

10^3 s

17 minutes

RT to sun

10^3 s

17 minutes

RT to sun

10^3 s

17 minutes

RT to sun

10^3 s

17 minutes

Uranus

10^4 s

average baseball game

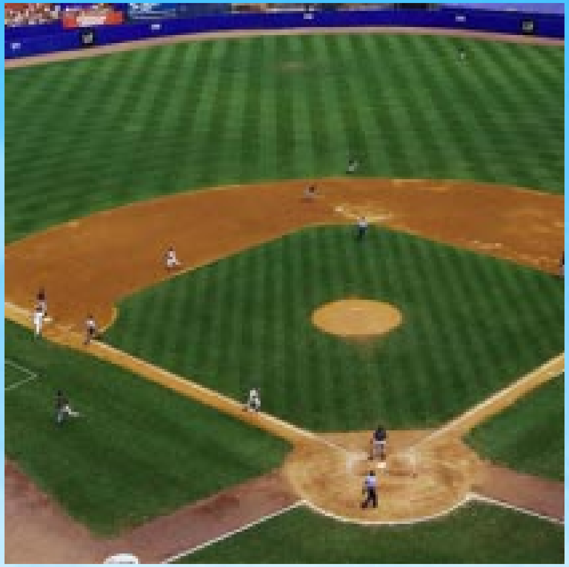
Uranus

10^4 s

average baseball game

Uranus

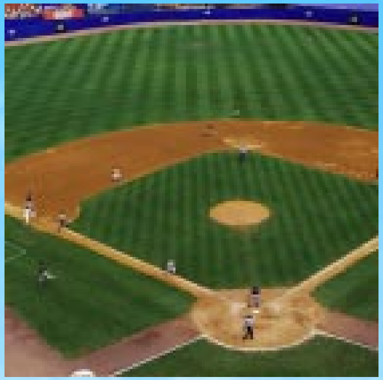
10^4 s



average baseball game

Uranus

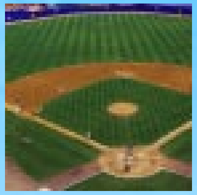
10^4 s



average baseball game

Uranus

10^4 s



average baseball game

10^5 s

1 day

10^5 s

1 day

10^5 s

1 day

10^5 s

1 day

10^5 s

1 day

10^6 s

2 weeks

10^6 s

2 weeks

10^6 s

2 weeks

10^6 s

2 weeks

10^6 s

2 weeks

10^7 s

one semester

10^7 s

one semester

10^7 s

one semester

10^7 s

one semester

10^7 s

one semester

Proxima Centauri

10^8 s

3 years

Proxima Centauri

10^8 s

3 years

Proxima Centauri

10^8 s

3 years

Proxima Centauri

10^8 s

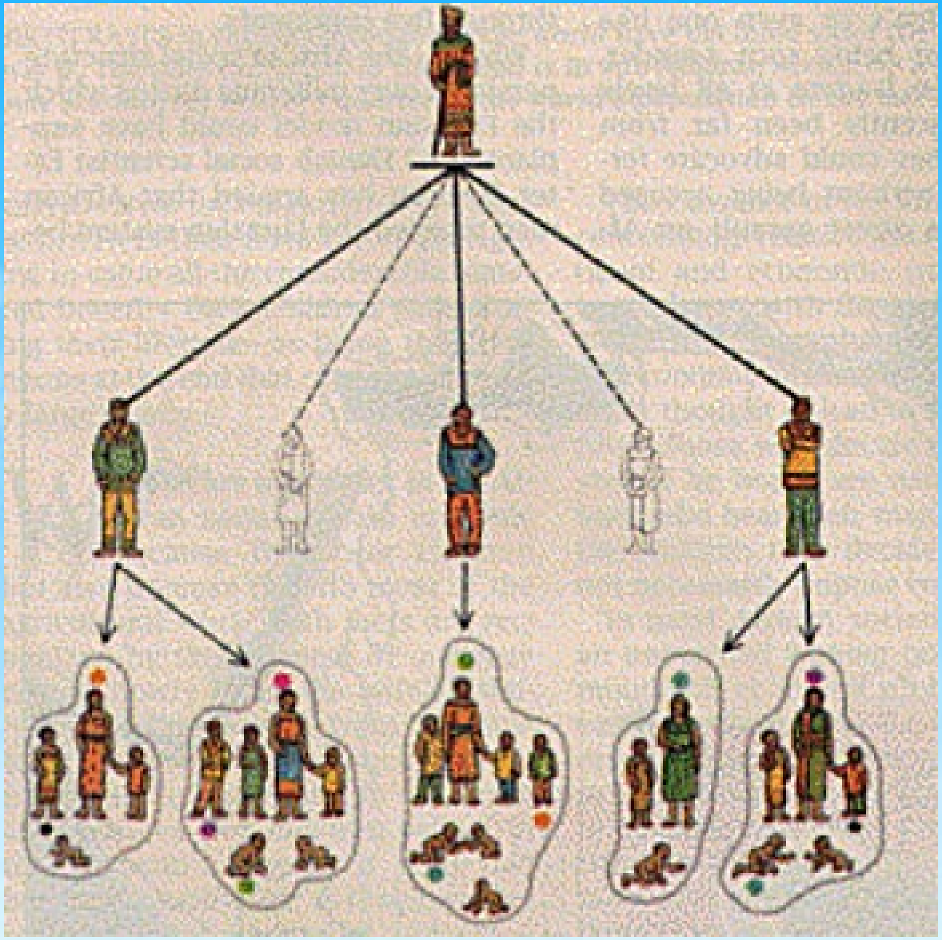
3 years

Proxima Centauri

10^8 s

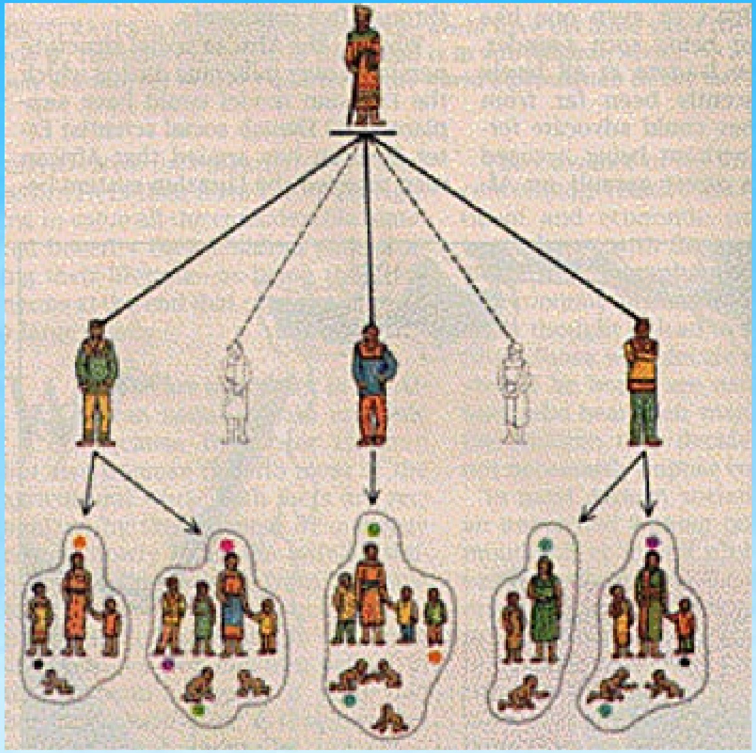
3 years

10^9 s



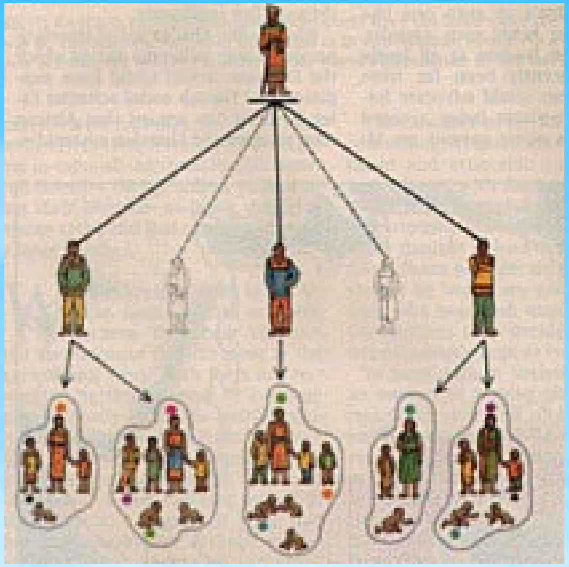
human generation

10^9 s



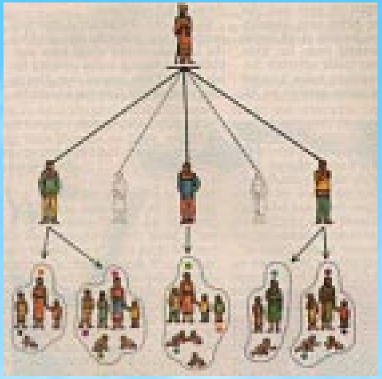
human generation

10^9 s



human generation

10^9 s

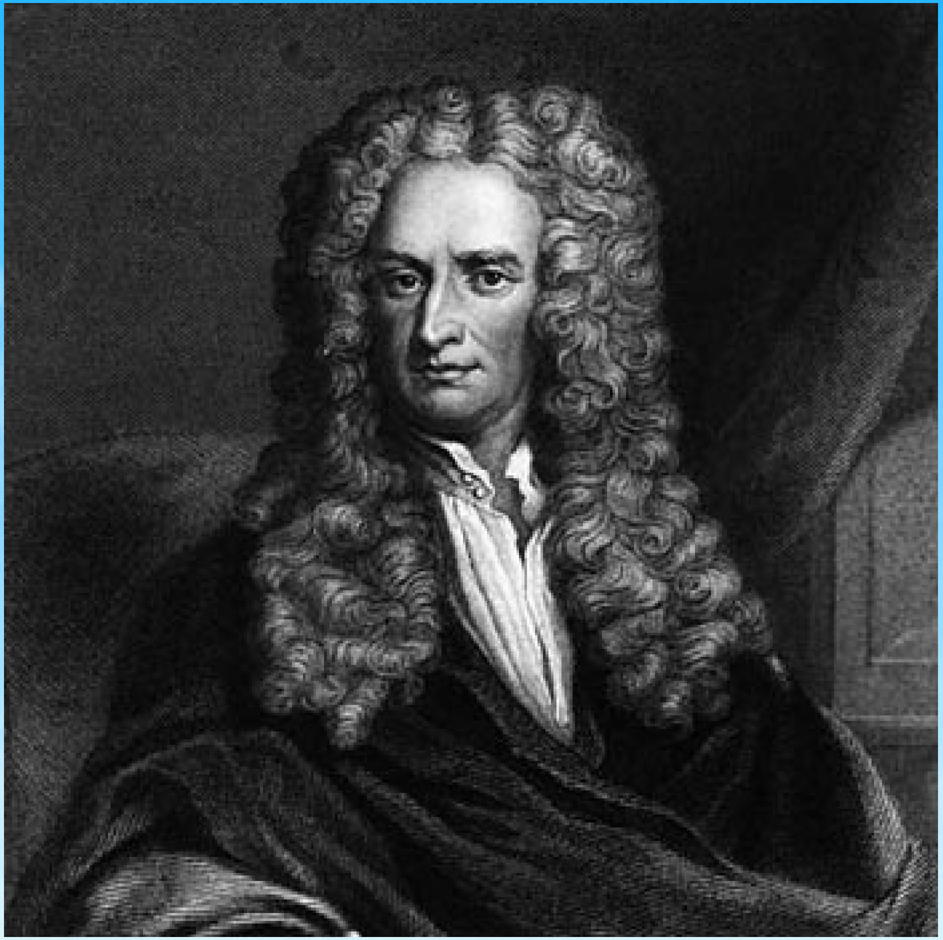


human generation

10^9 s

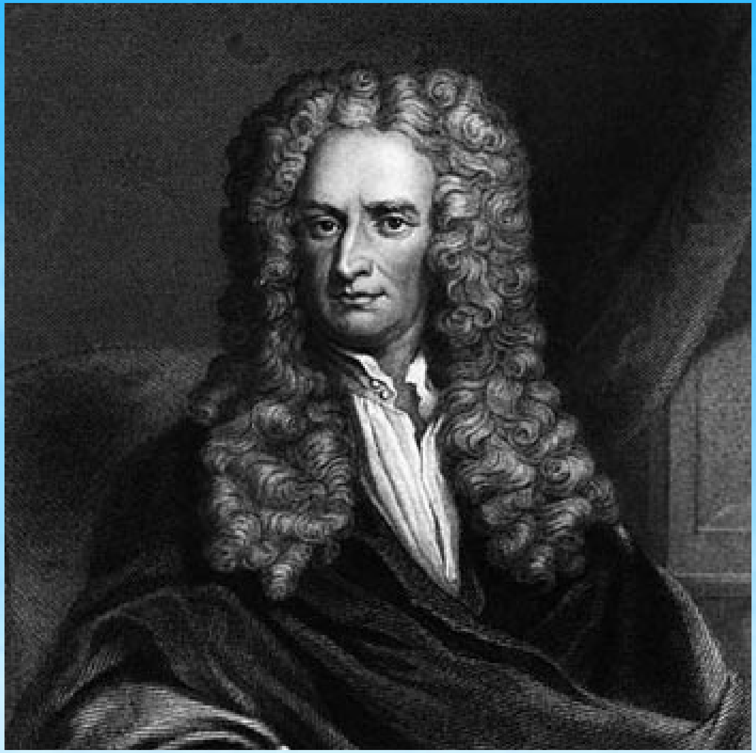
human generation

10^{10} s



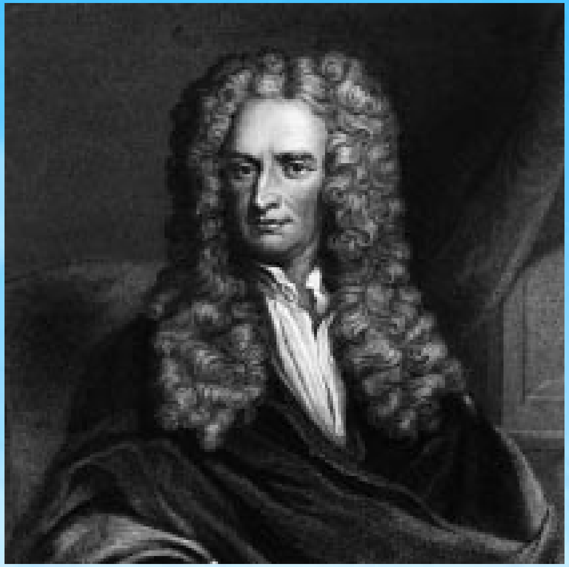
time since Newton

10^{10} s



time since Newton

10^{10} s

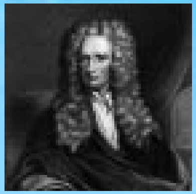


time since Newton

10^{10} s

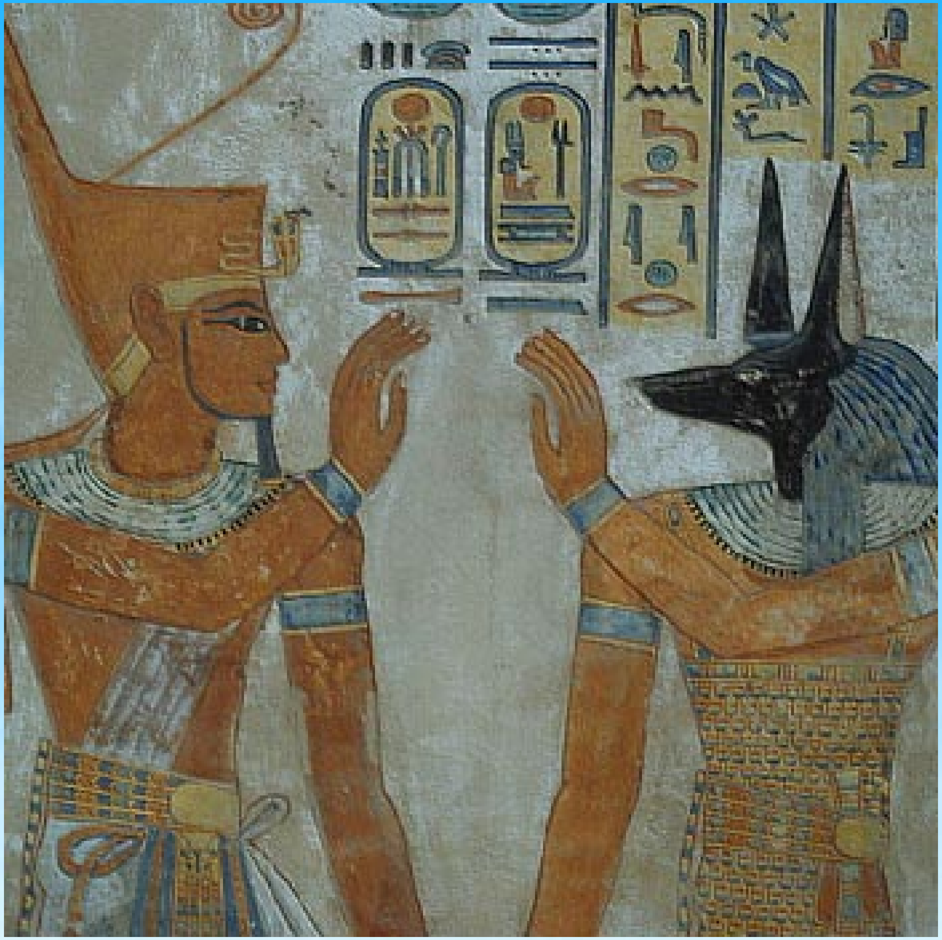
time since Newton

10^{10} s



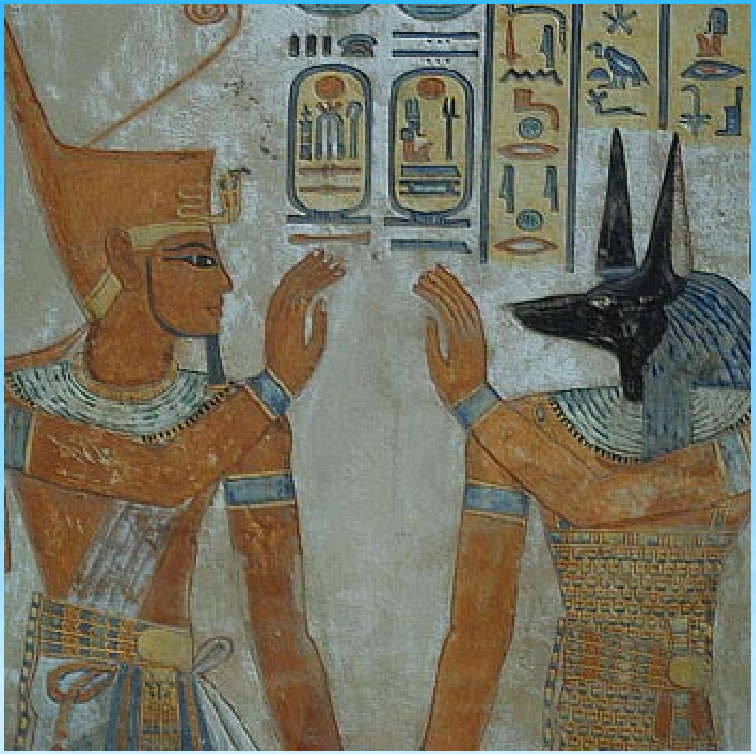
time since Newton

10^{11} s



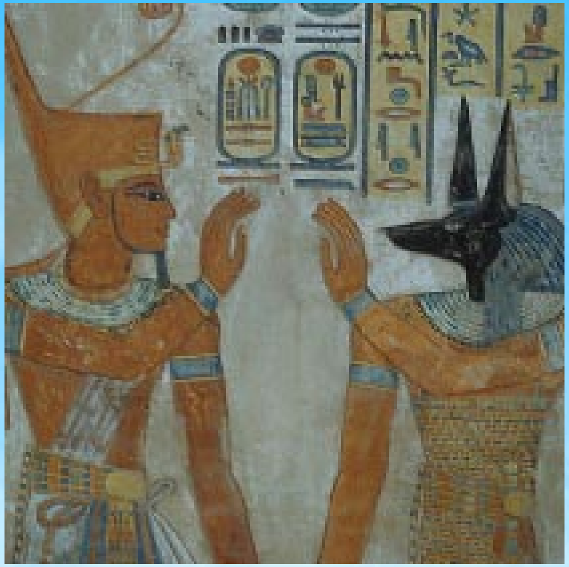
ancient civilizations

10^{11} s



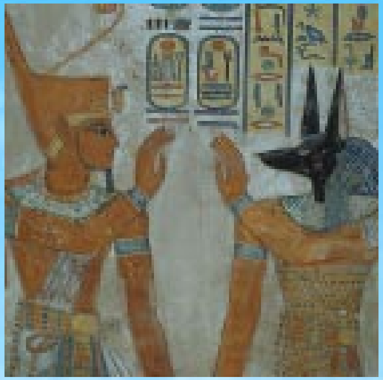
ancient civilizations

10^{11} s



ancient civilizations

10^{11} s



ancient civilizations

10^{11} s

ancient civilizations

center of galaxy

10^{12} s

most recent ice age

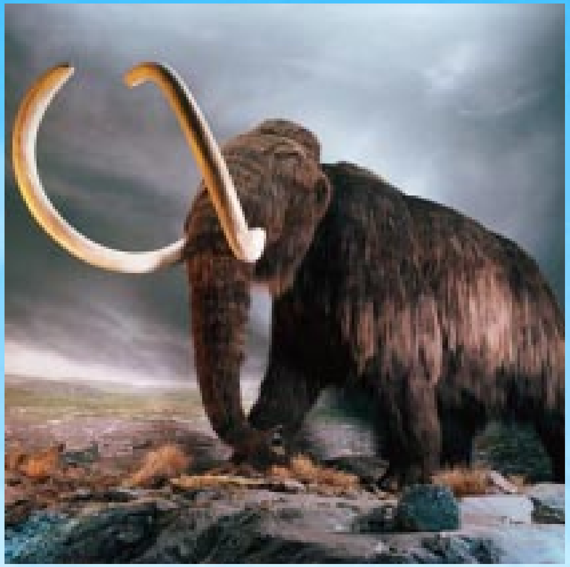
center of galaxy

10^{12} s

most recent ice age

center of galaxy

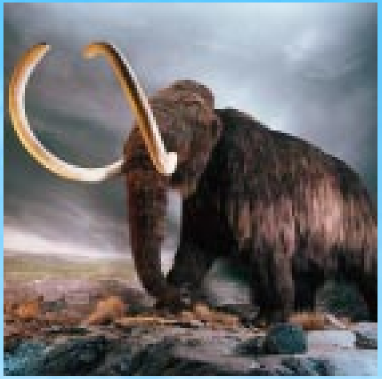
10^{12} s



most recent ice age

center of galaxy

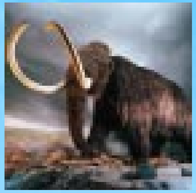
10^{12} s



most recent ice age

center of galaxy

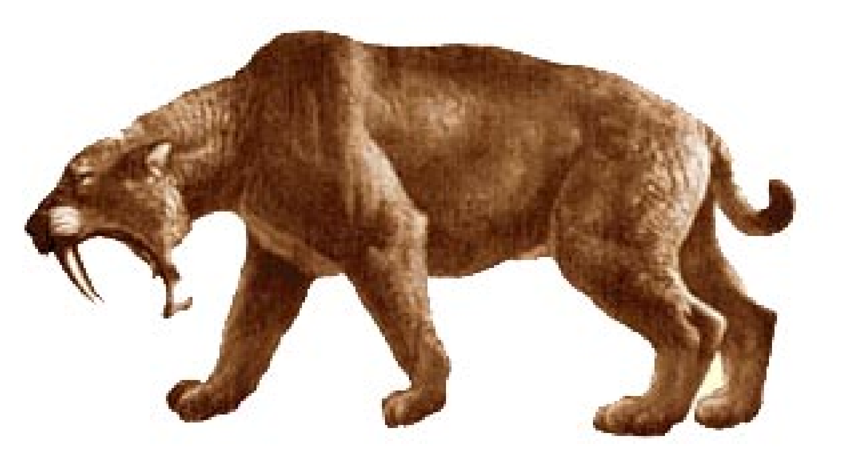
10^{12} s



most recent ice age

Andromeda galaxy

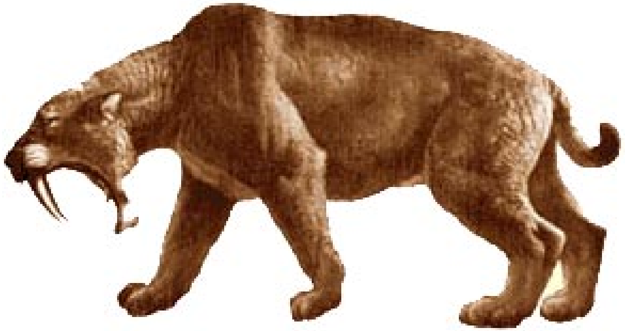
10^{13} s



300,000 years

Andromeda galaxy

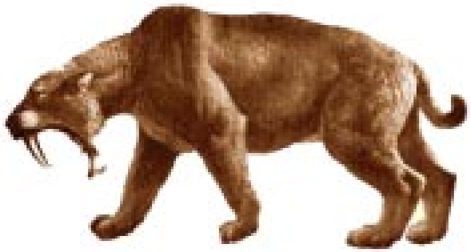
10^{13} s



300,000 years

Andromeda galaxy

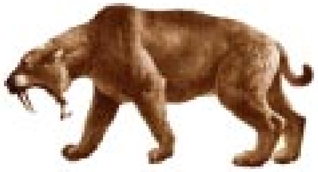
10^{13} s



300,000 years

Andromeda galaxy

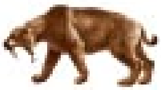
10^{13} s



300,000 years

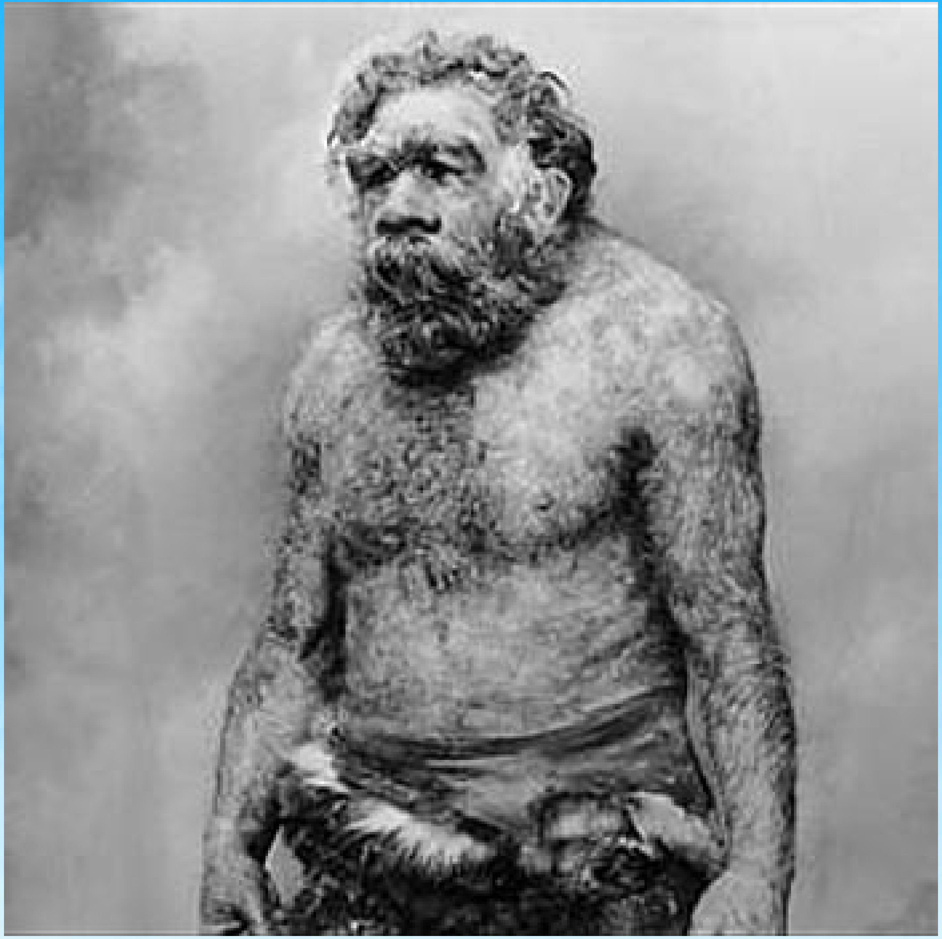
Andromeda galaxy

10^{13} s



300,000 years

10^{14} s

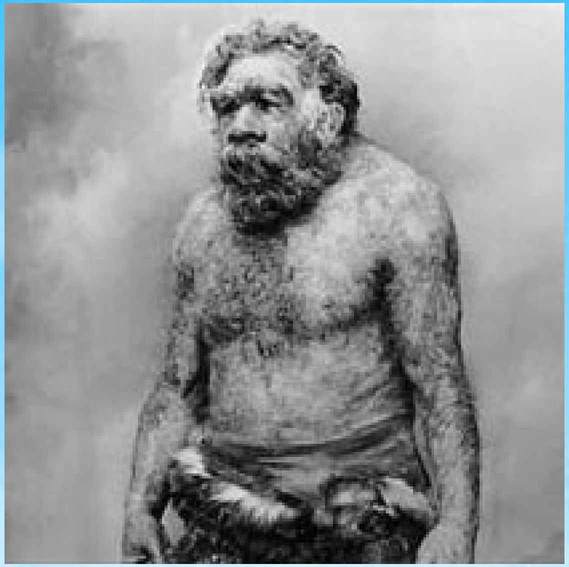


earliest human

10^{14} s

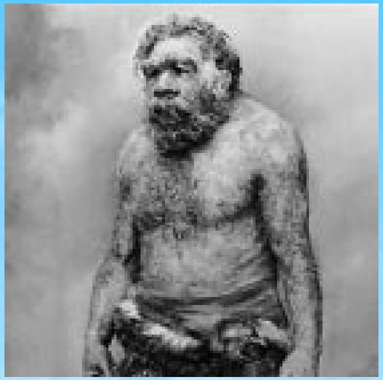
earliest human

10^{14} s



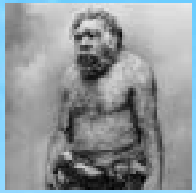
earliest human

10^{14} s



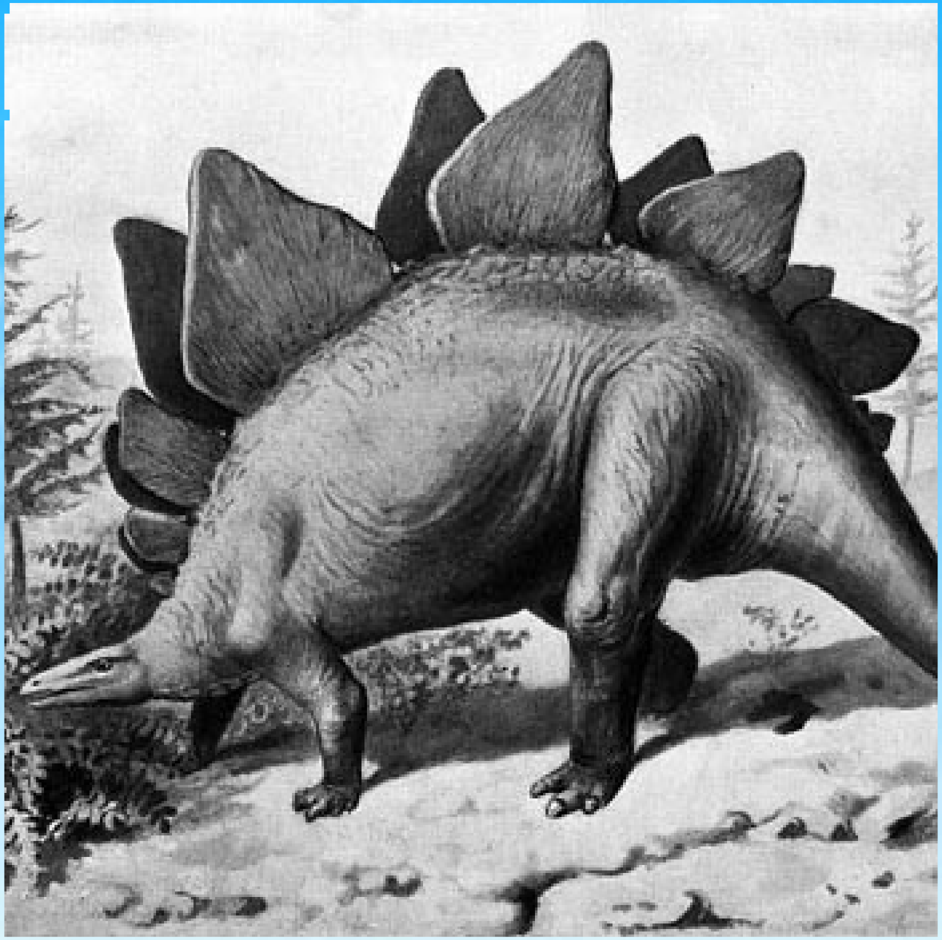
earliest human

10^{14} s



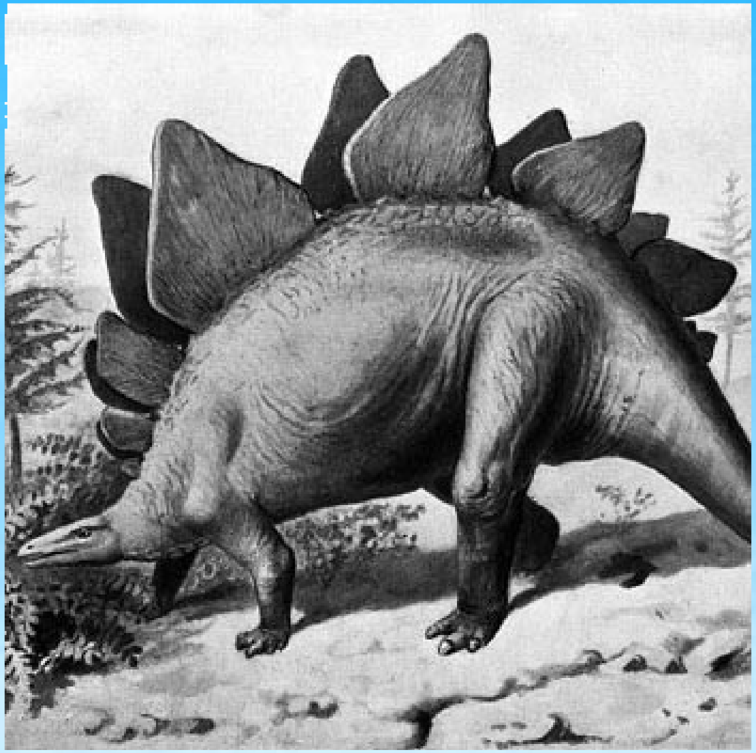
earliest human

10^{15} s



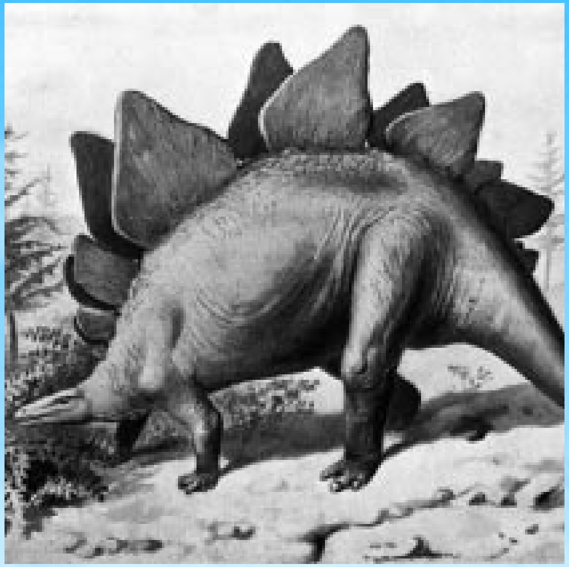
dinosaurs

10^{15} s



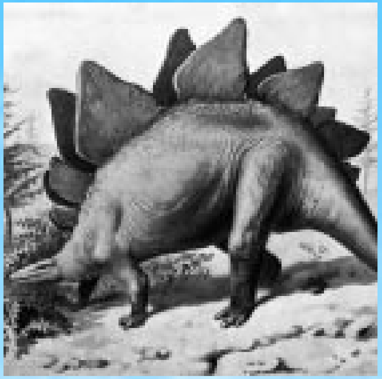
dinosaurs

10^{15} s



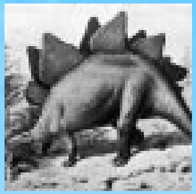
dinosaurs

10^{15} s



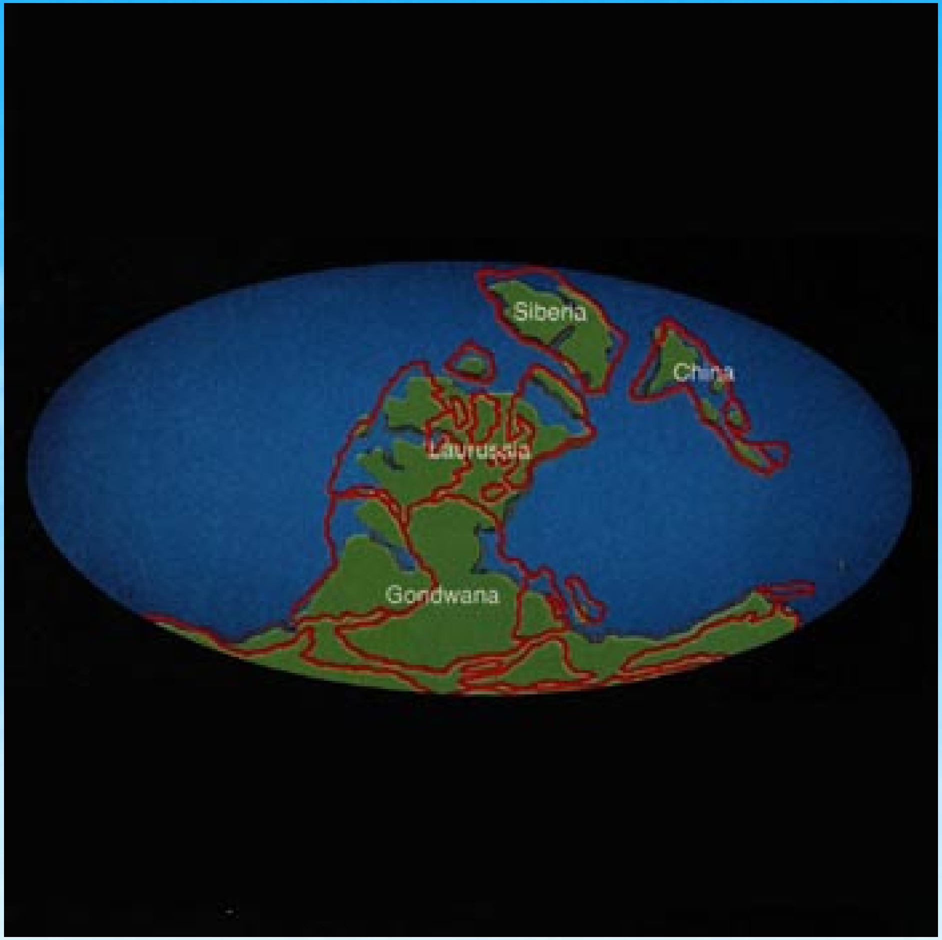
dinosaurs

10^{15} s



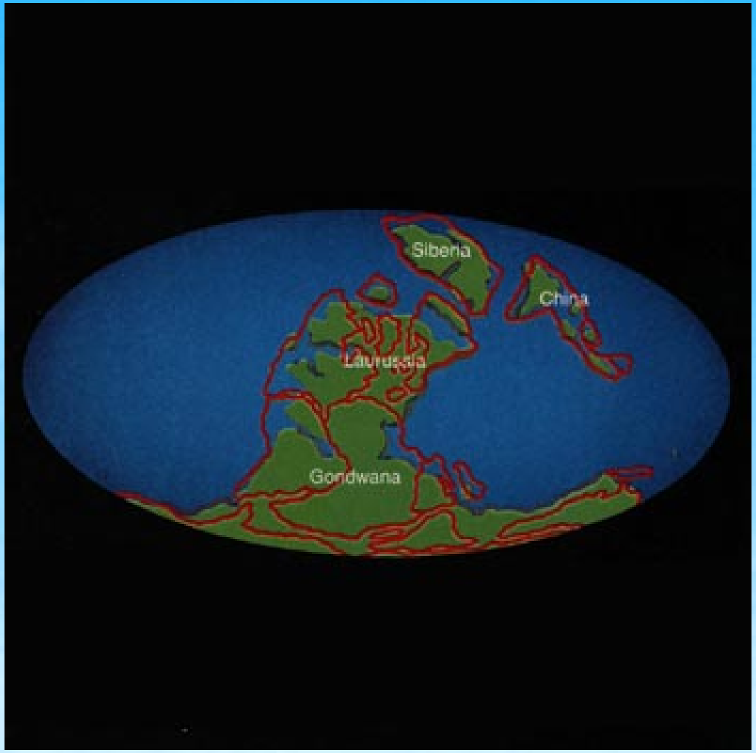
dinosaurs

10^{16} s


Siberia
China
Laurussia
Gondwana

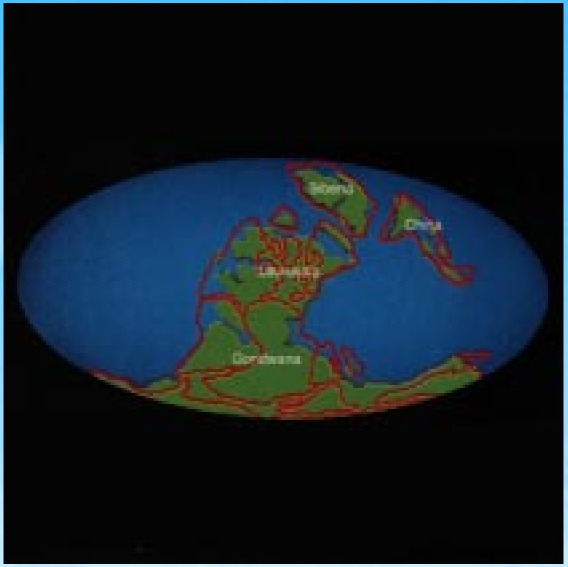
continental drift

10^{16} s


Siberia
China
Laurussia
Gondwana

continental drift

10^{16} s

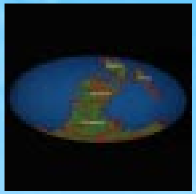

Siberia
China
Laurussia
Gondwana

continental drift

10^{16} s

continental drift

10^{16} s



continental drift

10^{17} s

age of the solar system

10^{17} s

age of the solar system

10^{17} s

age of the solar system

10^{17} s

age of the solar system

10^{17} s

age of the solar system

edge of the universe

10^{18} s

age of known universe

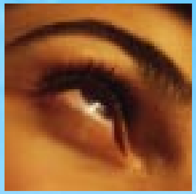
moon

10^0 s

trackmaster
1/5

one second

10^{-1} s

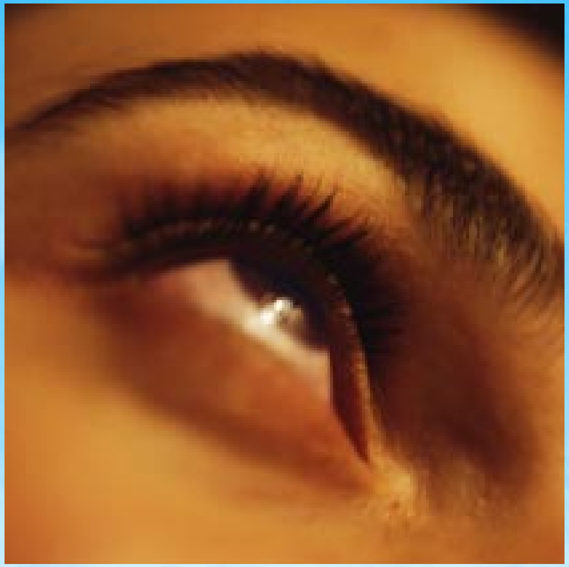


blink of an eye

10^{-1} s

blink of an eye

10^{-1} s



blink of an eye

10^{-1} s

blink of an eye

10^{-1} s

blink of an eye

10^{-2} s

golf swing

10^{-2} s

golf swing

10^{-2} s

golf swing

10^{-2} s

golf swing

10^{-2} s

golf swing

San Francisco

10^{-3} s

wingbeat of fly

San Francisco

10^{-3} s

wingbeat of fly

San Francisco

10^{-3} s

wingbeat of fly

San Francisco

10^{-3} s

wingbeat of fly

San Francisco

10^{-3} s

wingbeat of fly

10^{-4} s

lightning

10^{-4} s

lightning

10^{-4} s

lightning

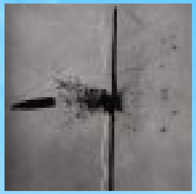
10^{-4} s

lightning

10^{-4} s

lightning

10^{-5} s



bullet through glass

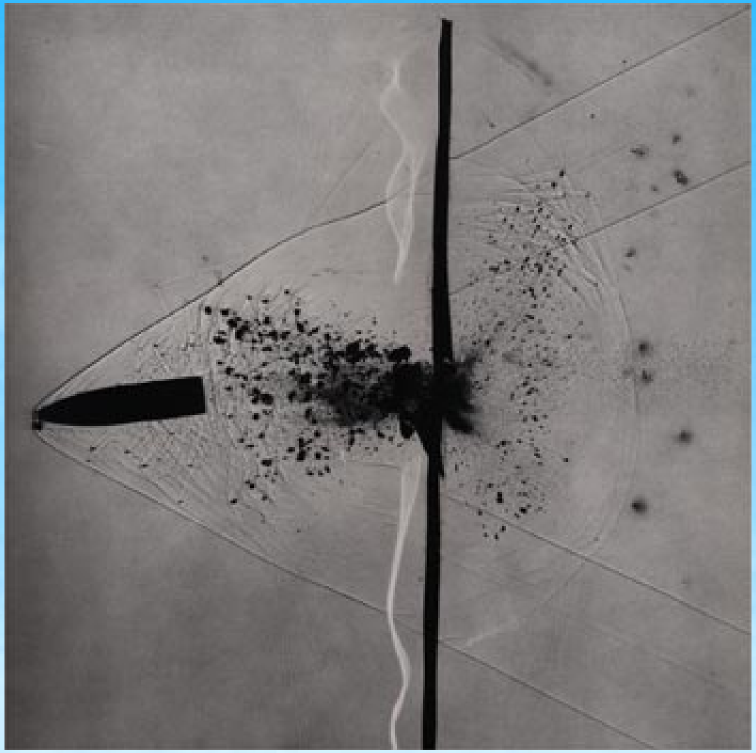
10^{-5} s

bullet through glass

10^{-5} s

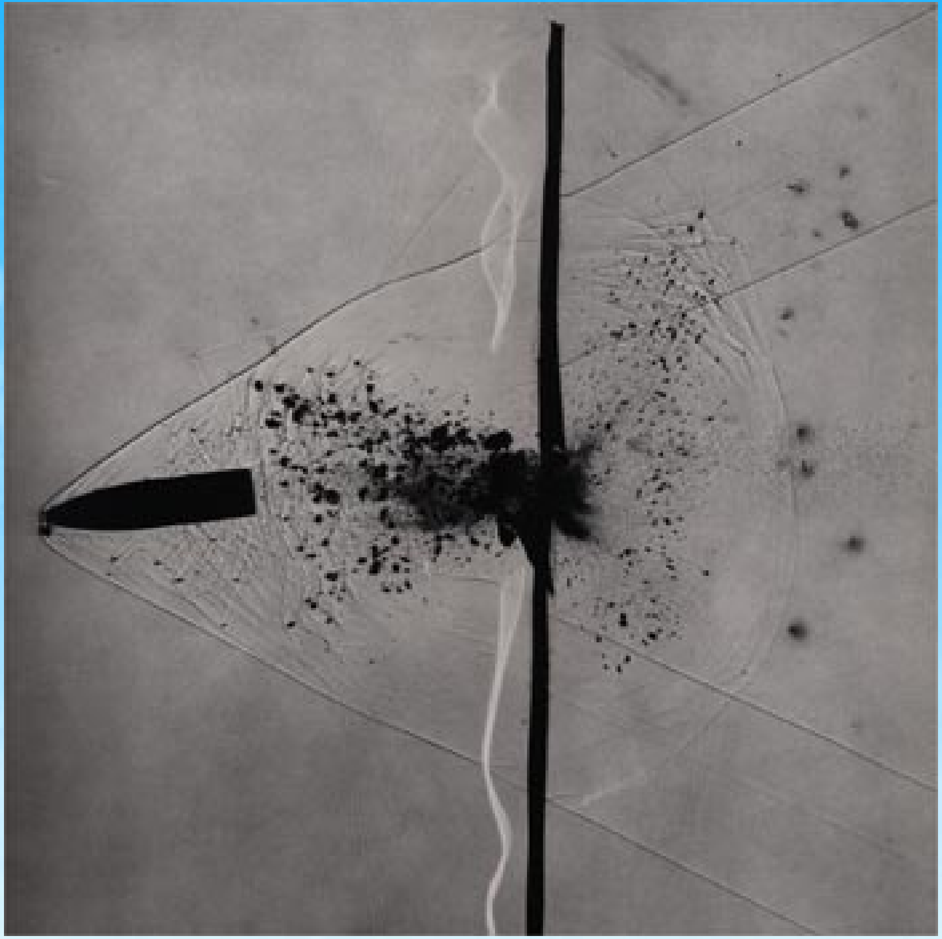
bullet through glass

10^{-5} s



bullet through glass

10^{-5} s



bullet through glass

10^{-6} s

strobe flash

10^{-6} s

strobe flash

10^{-6} s

strobe flash

10^{-6} s

strobe flash

10^{-6} s

strobe flash

lecture hall

10^{-7} s

hard disk write time

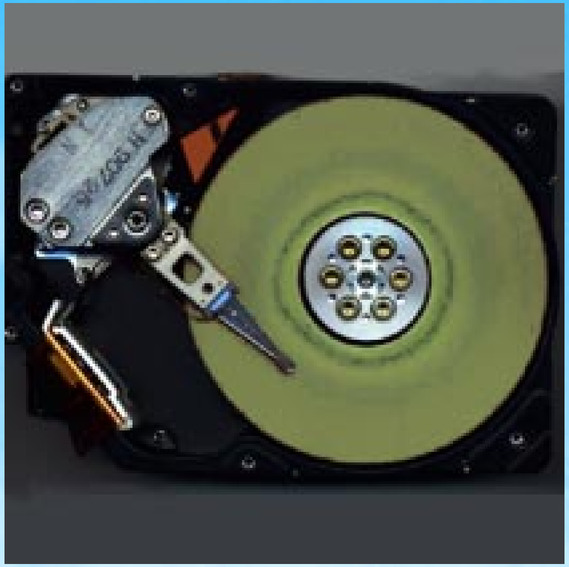
lecture hall

10^{-7} s

hard disk write time

lecture hall

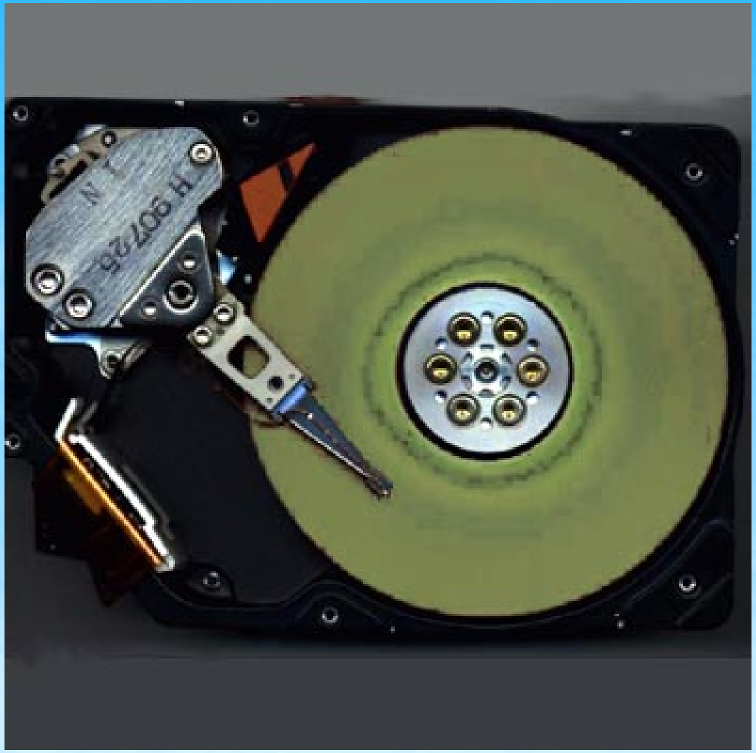
10^{-7} s



hard disk write time

lecture hall

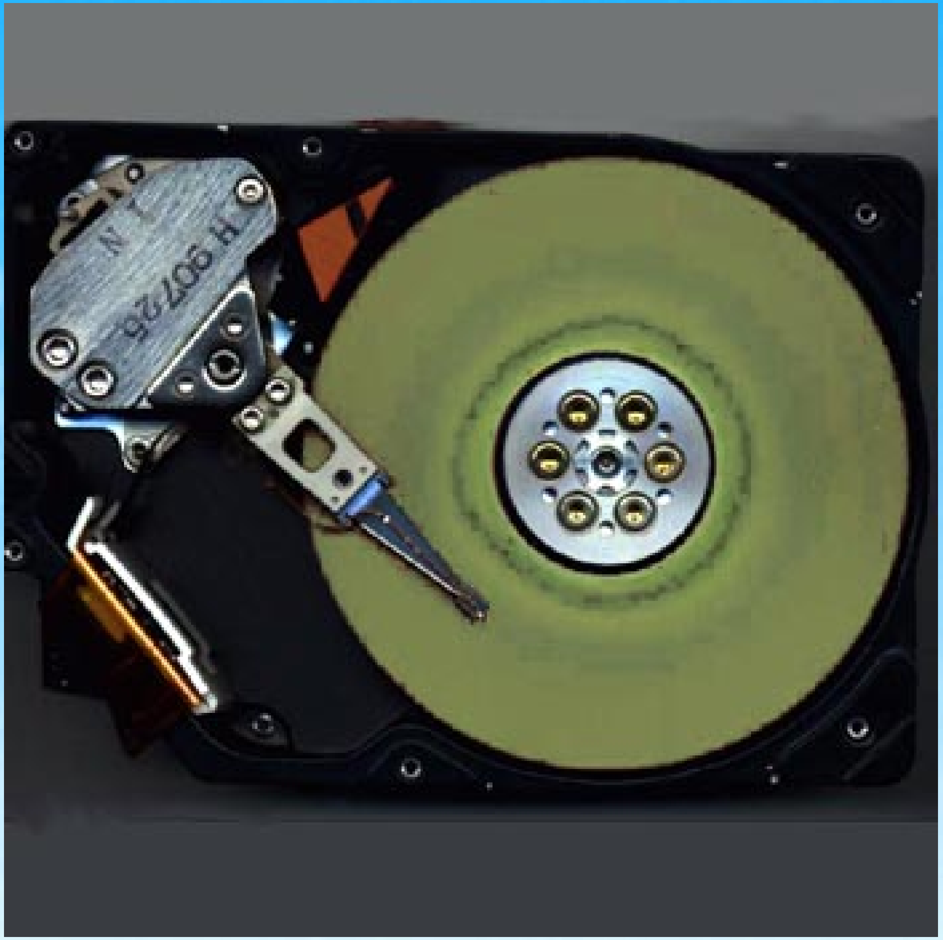
10^{-7} s



hard disk write time

lecture hall

10^{-7} s



hard disk write time

10^{-8} s

Deep Blue calculation

10^{-8} s

Deep Blue calculation

10^{-8} s

Deep Blue calculation

10^{-8} s

Deep Blue calculation

10^{-8} s

Deep Blue calculation

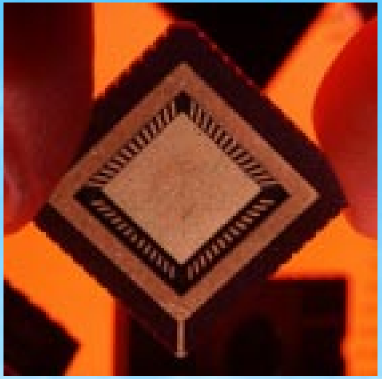
one foot

10^{-9} s

clock speed of chip

one foot

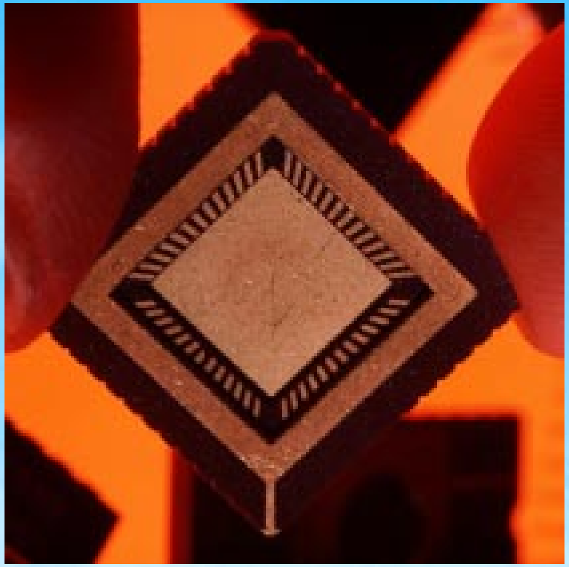
10^{-9} s



clock speed of chip

one foot

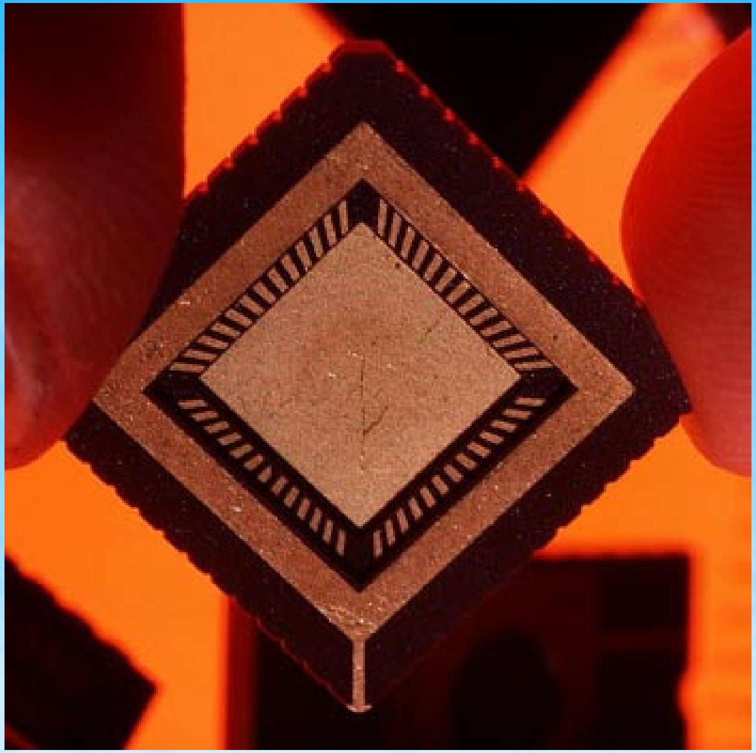
10^{-9} s



clock speed of chip

one foot

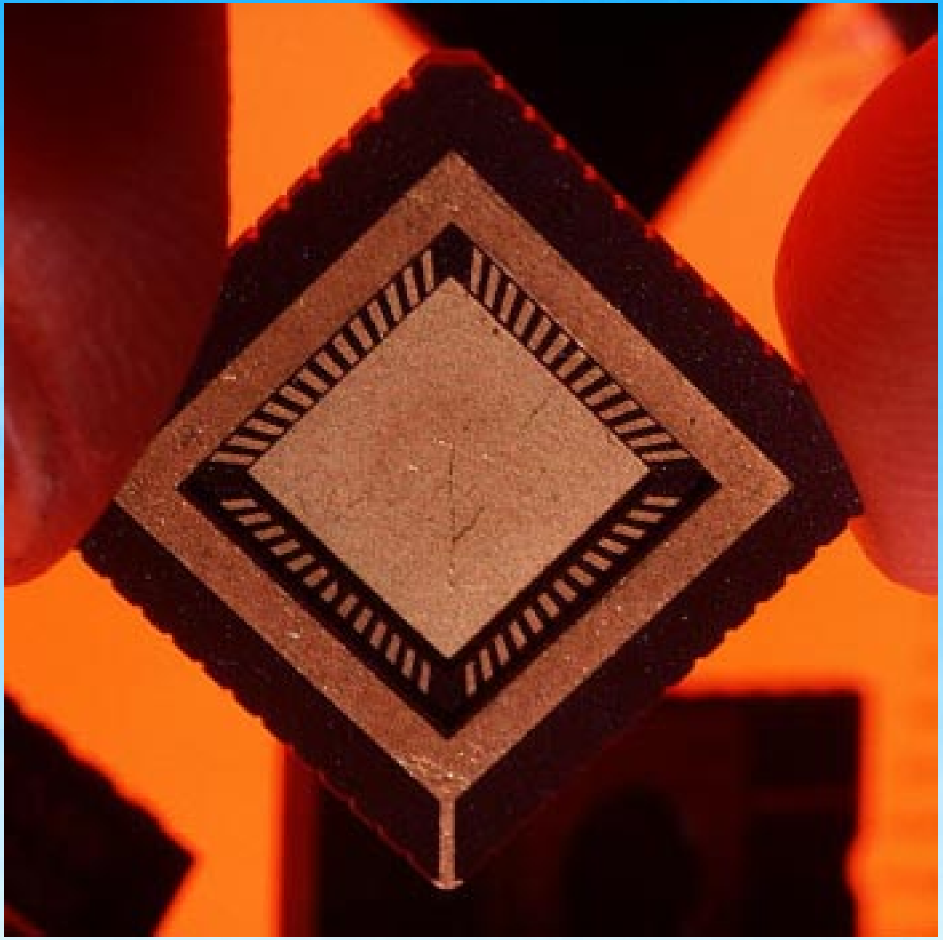
10^{-9} s



clock speed of chip

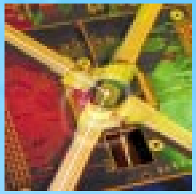
one foot

10^{-9} s



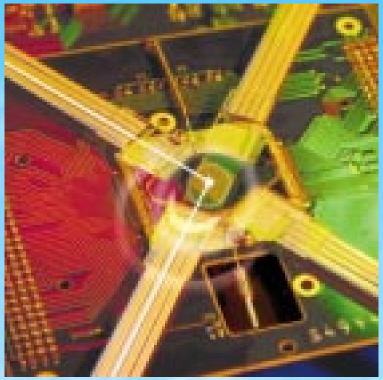
clock speed of chip

10^{-10} s



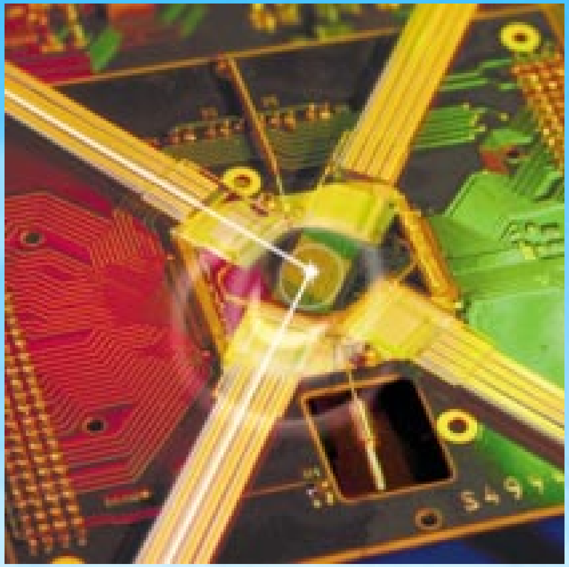
fastest electronic switch

10^{-10} s



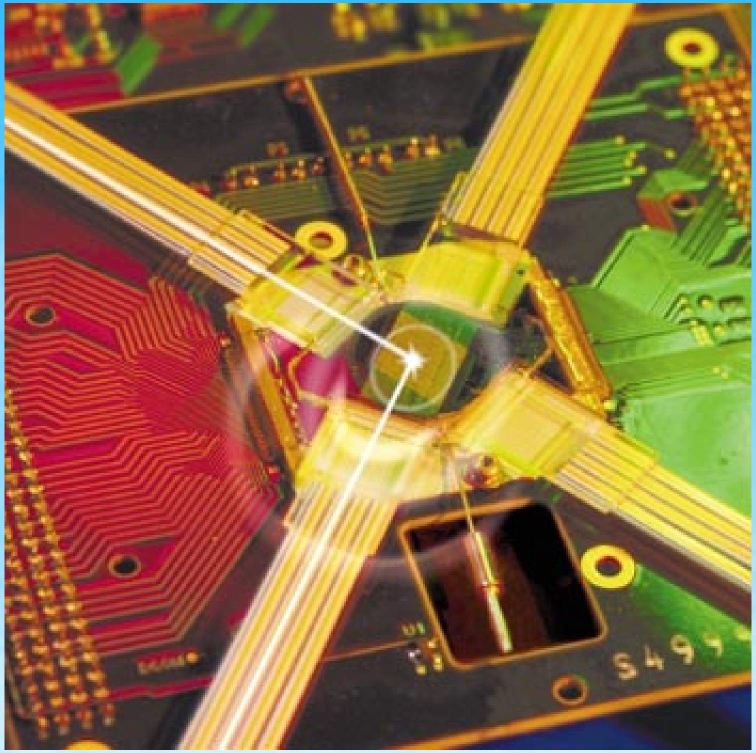
fastest electronic switch

10^{-10} s



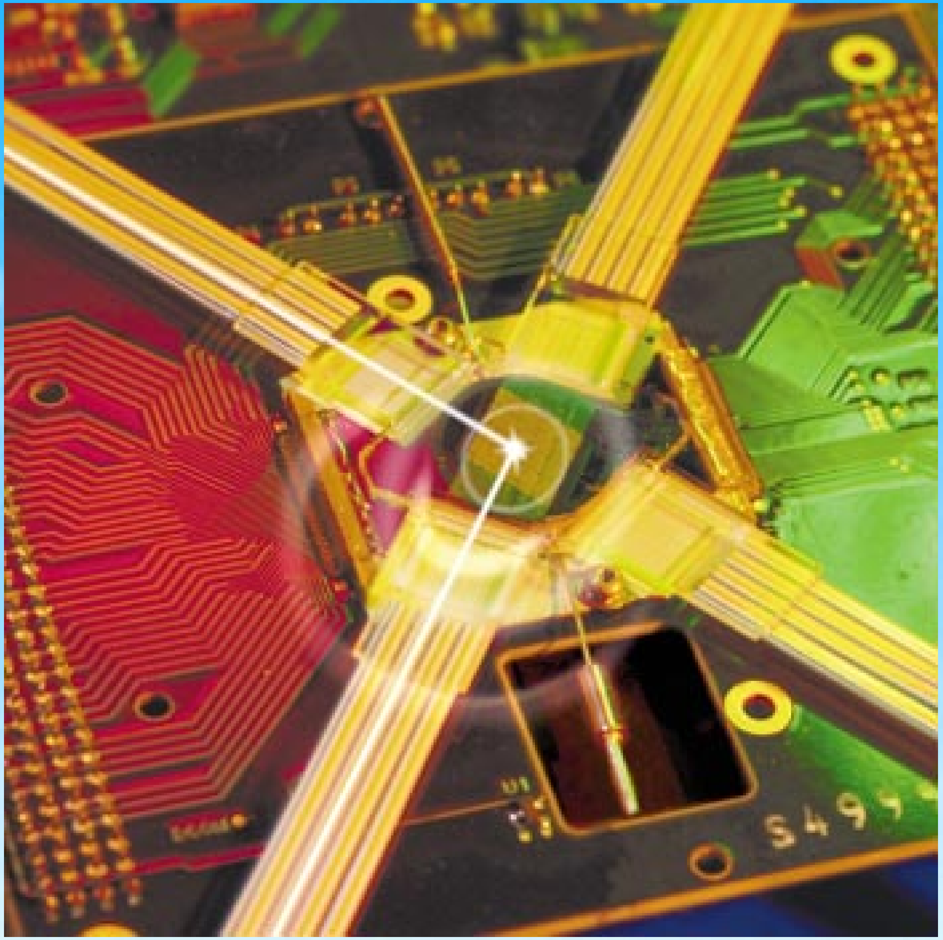
fastest electronic switch

10^{-10} s



fastest electronic switch

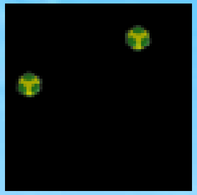
10^{-10} s



fastest electronic switch

window pane

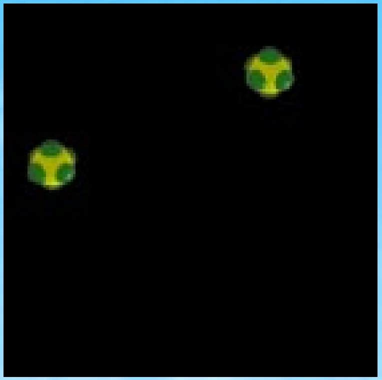
10^{-11} s



molecular collision

window pane

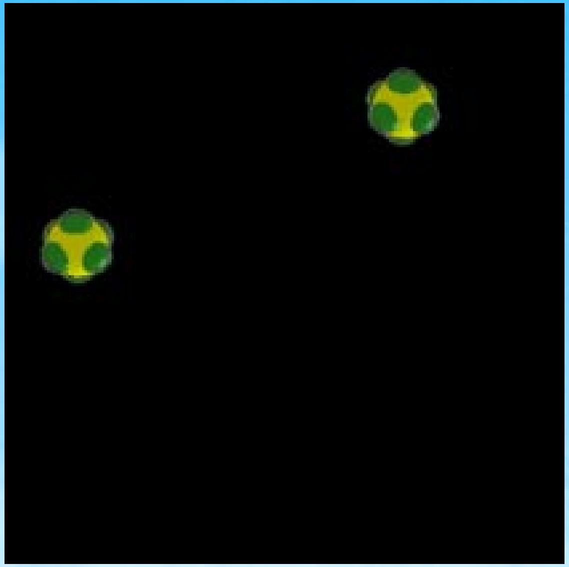
10^{-11} s



molecular collision

window pane

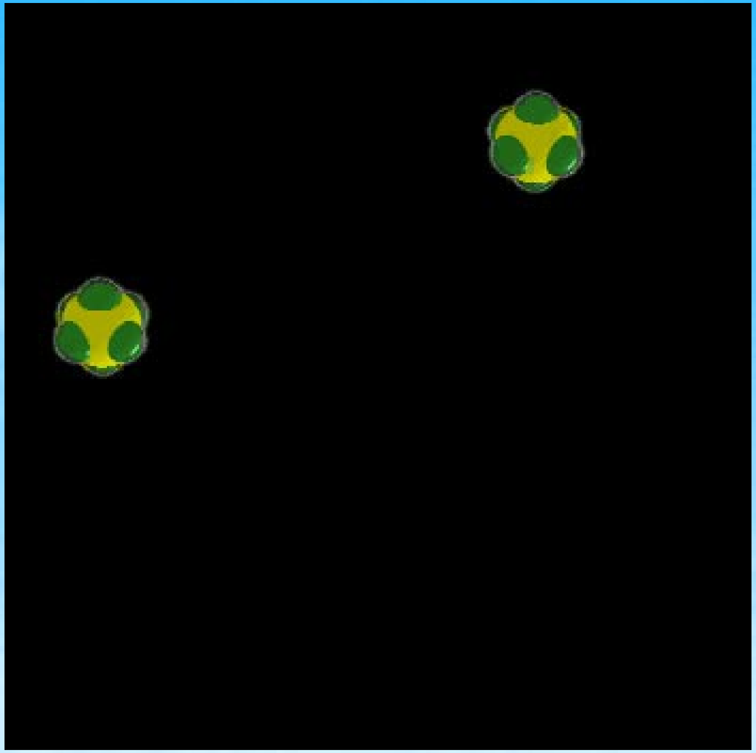
10^{-11} s



molecular collision

window pane

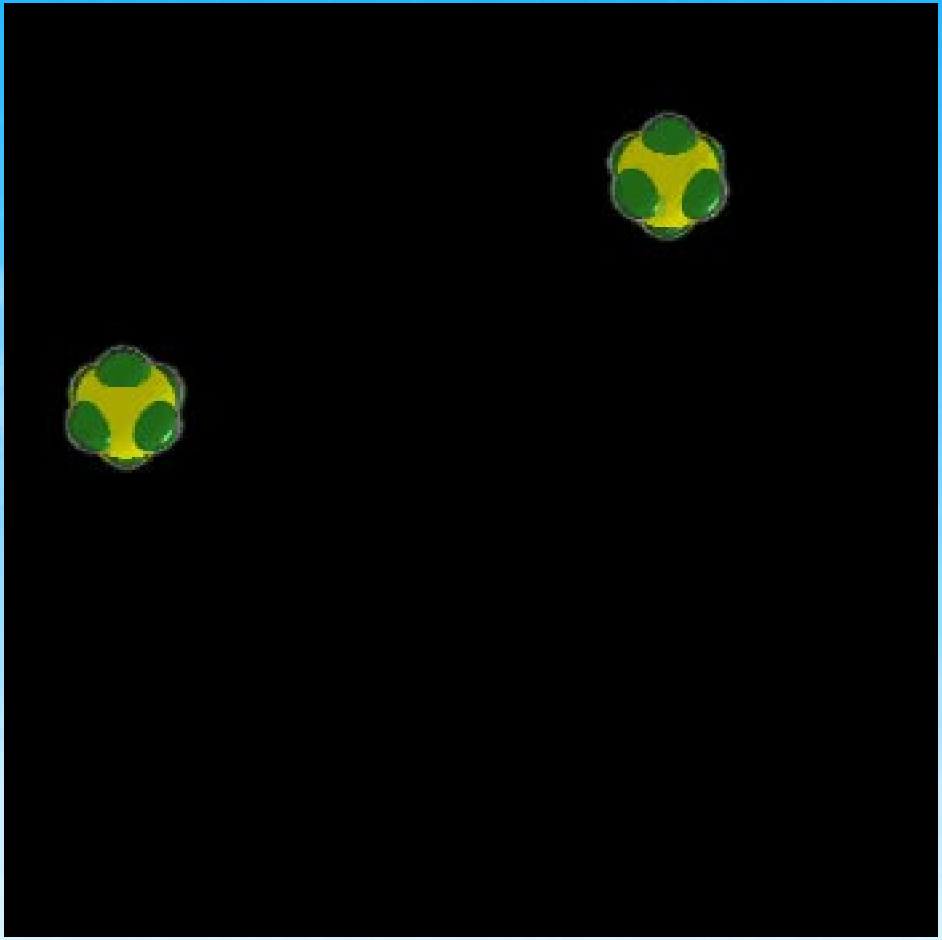
10^{-11} s



molecular collision

window pane

10^{-11} s



molecular collision

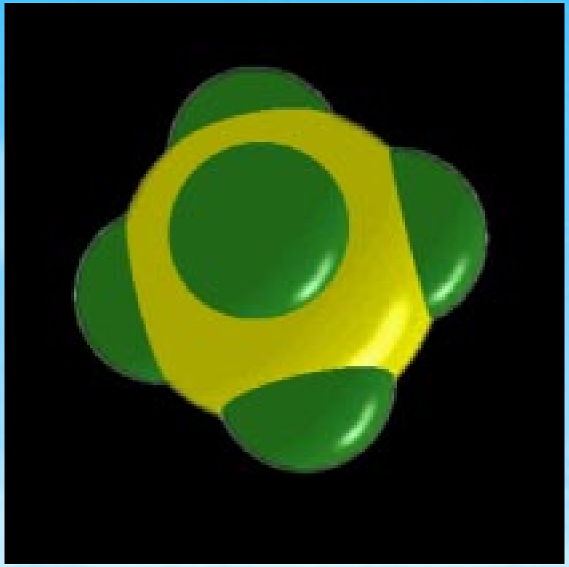
10^{-12} s

molecular rotation

10^{-12} s

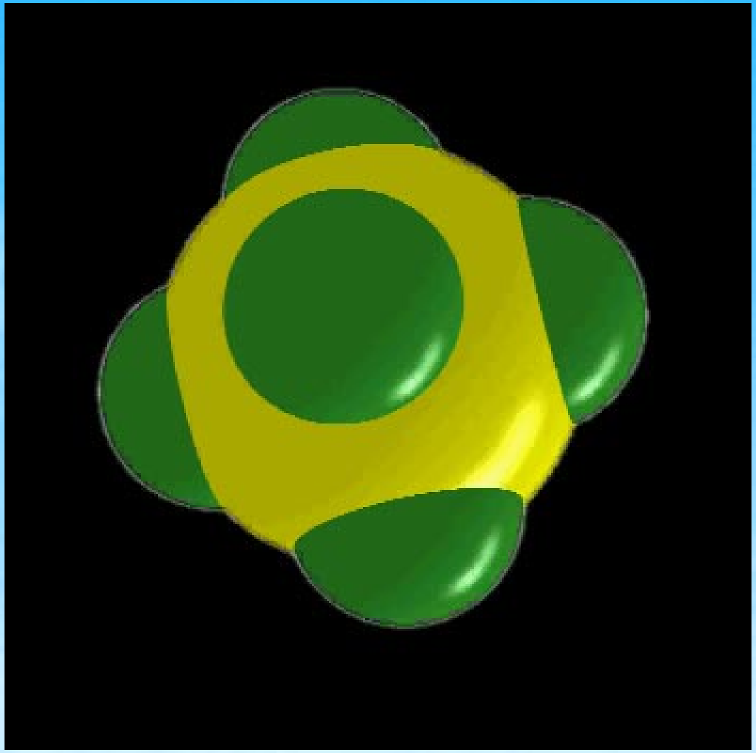
molecular rotation

10^{-12} s



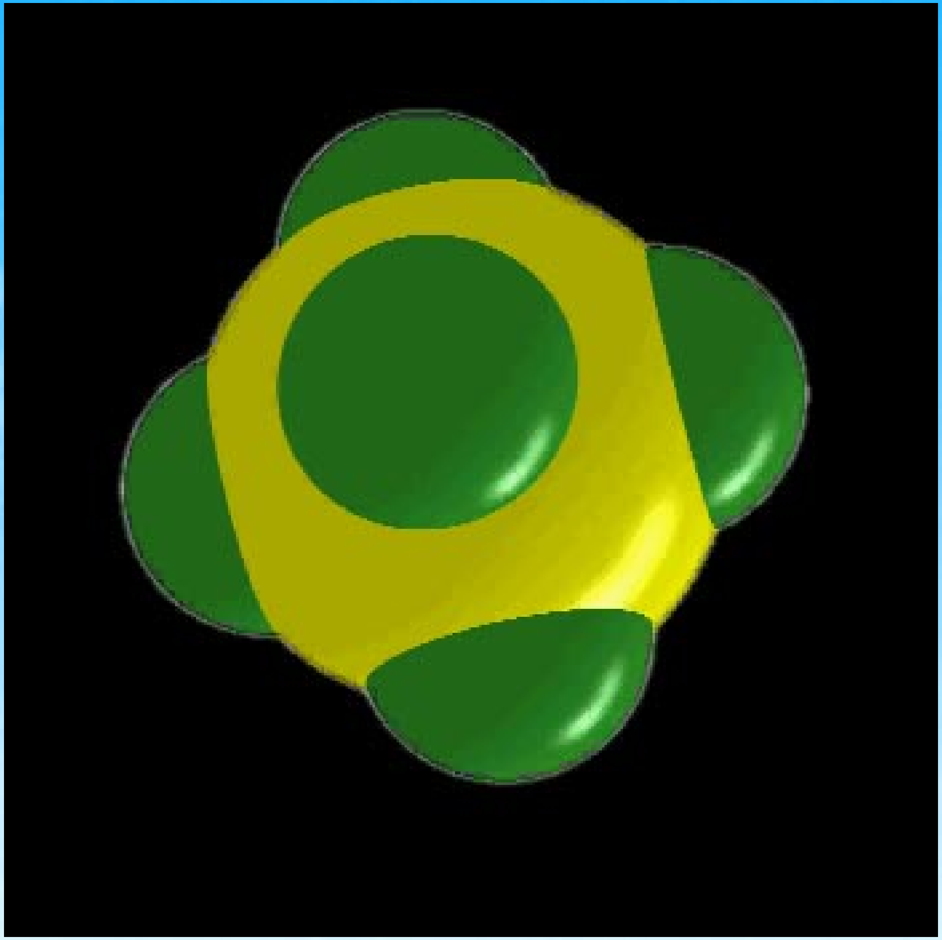
molecular rotation

10^{-12} s



molecular rotation

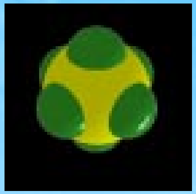
10^{-12} s



molecular rotation

width of human hair

10^{-13} s



molecular vibration

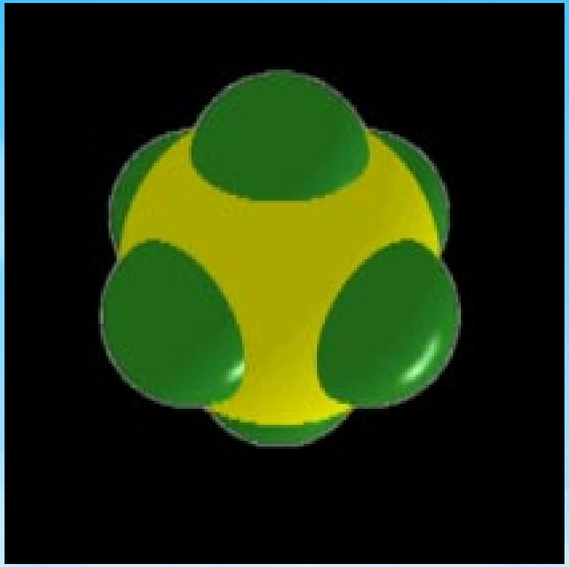
width of human hair

10^{-13} s

molecular vibration

width of human hair

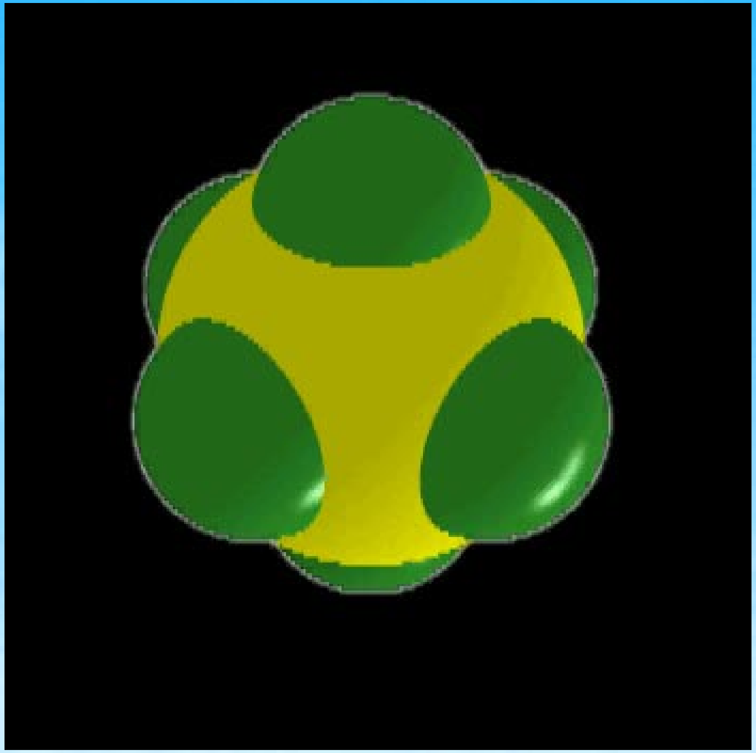
10^{-13} s



molecular vibration

width of human hair

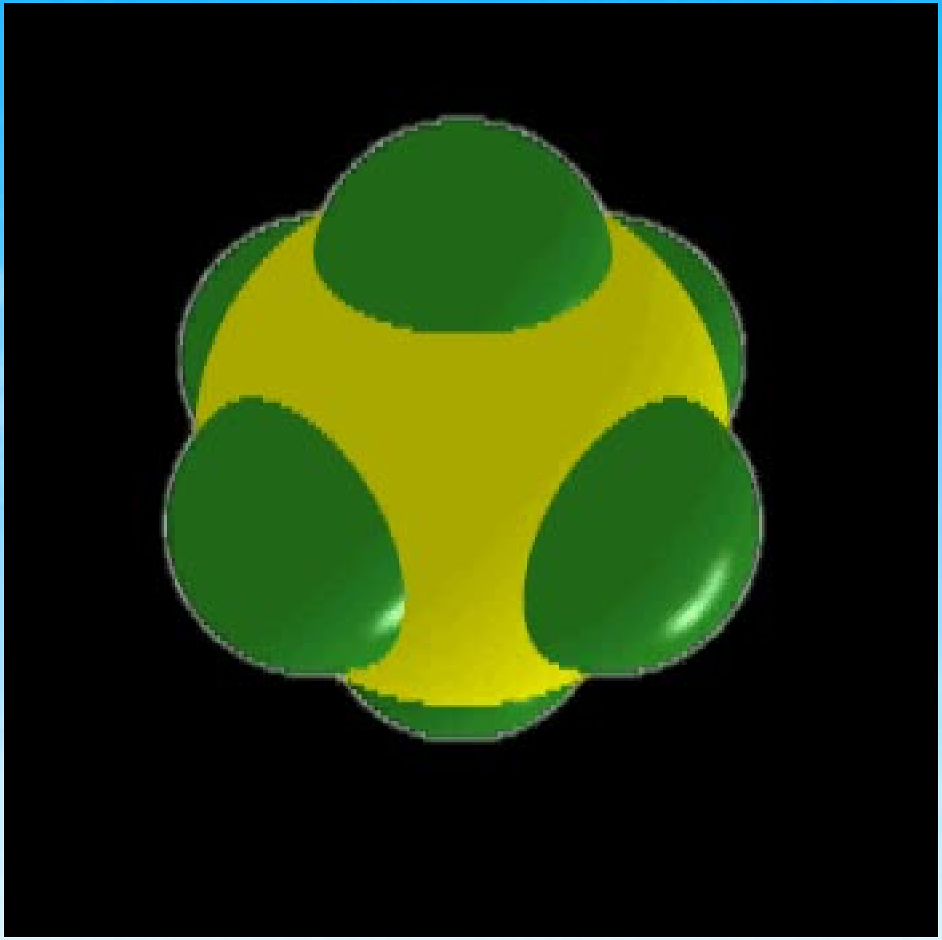
10^{-13} s



molecular vibration

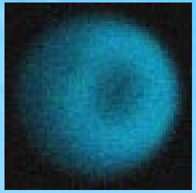
width of human hair

10^{-13} s



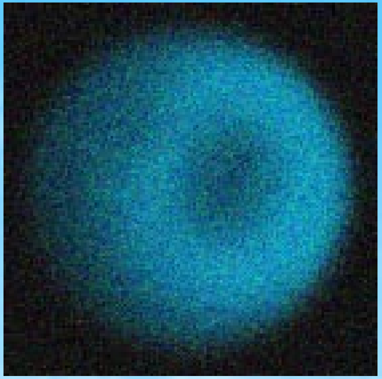
molecular vibration

10^{-14} s



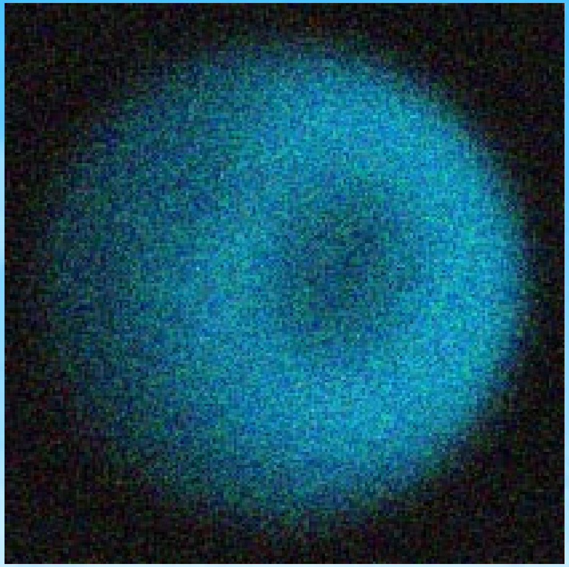
electronic collision

10^{-14} s



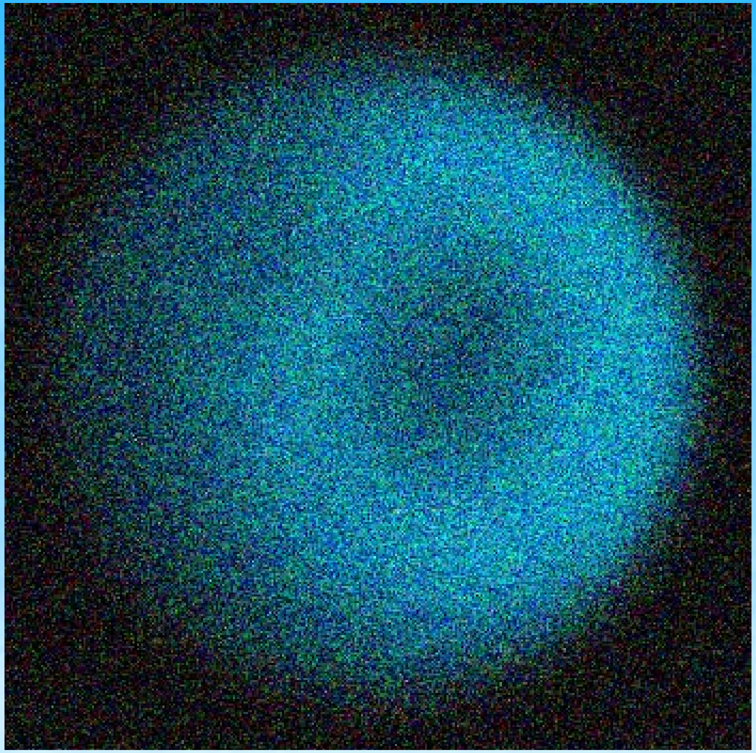
electronic collision

10^{-14} s



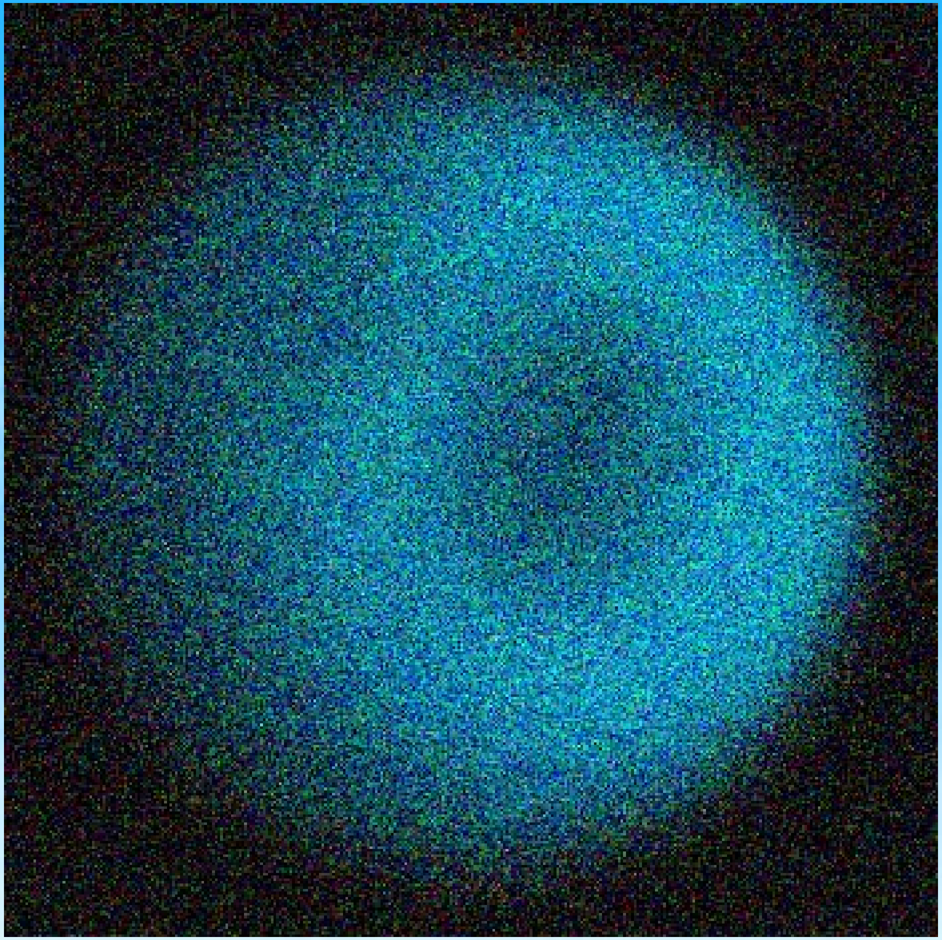
electronic collision

10^{-14} s



electronic collision

10^{-14} s

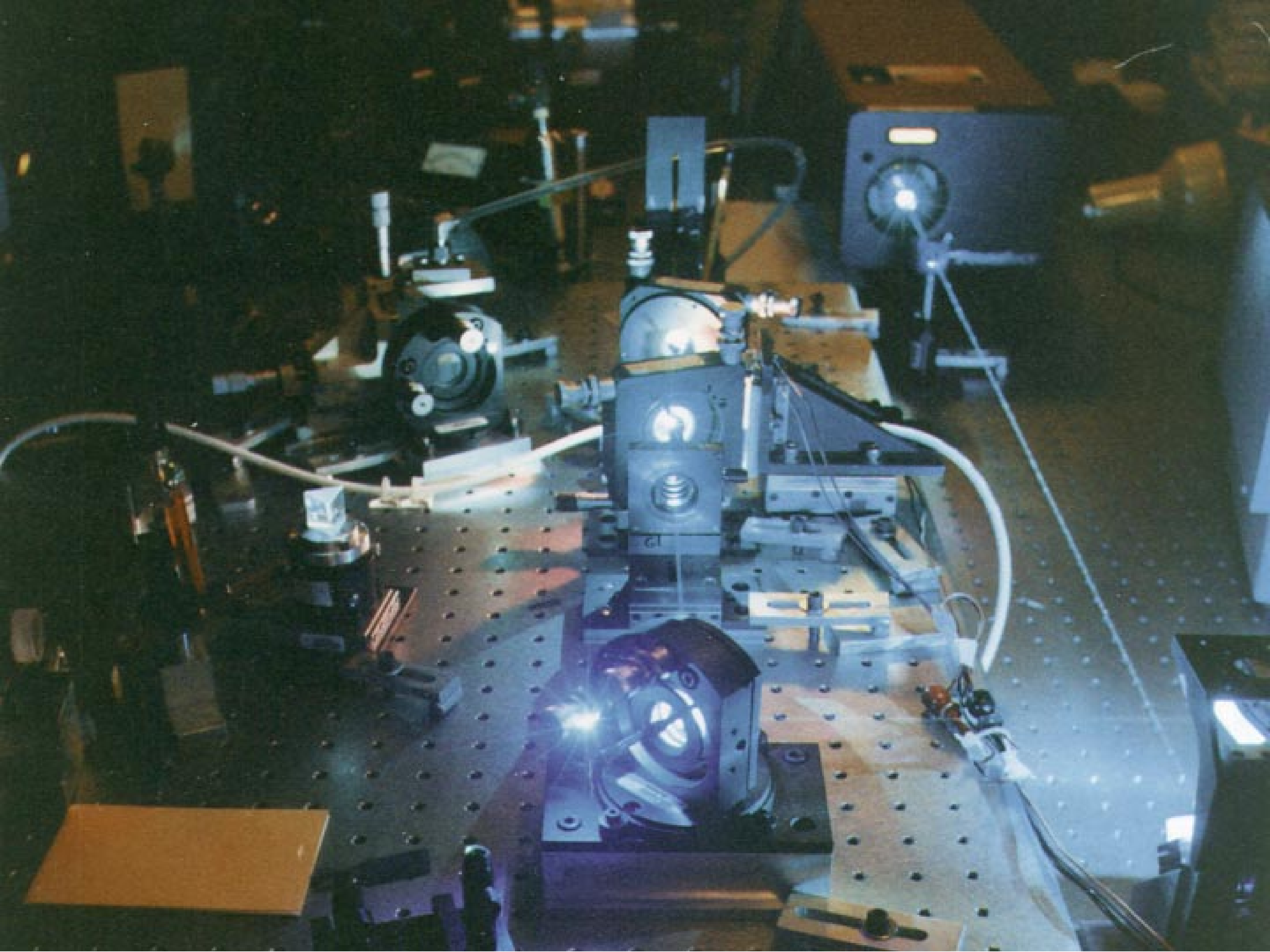


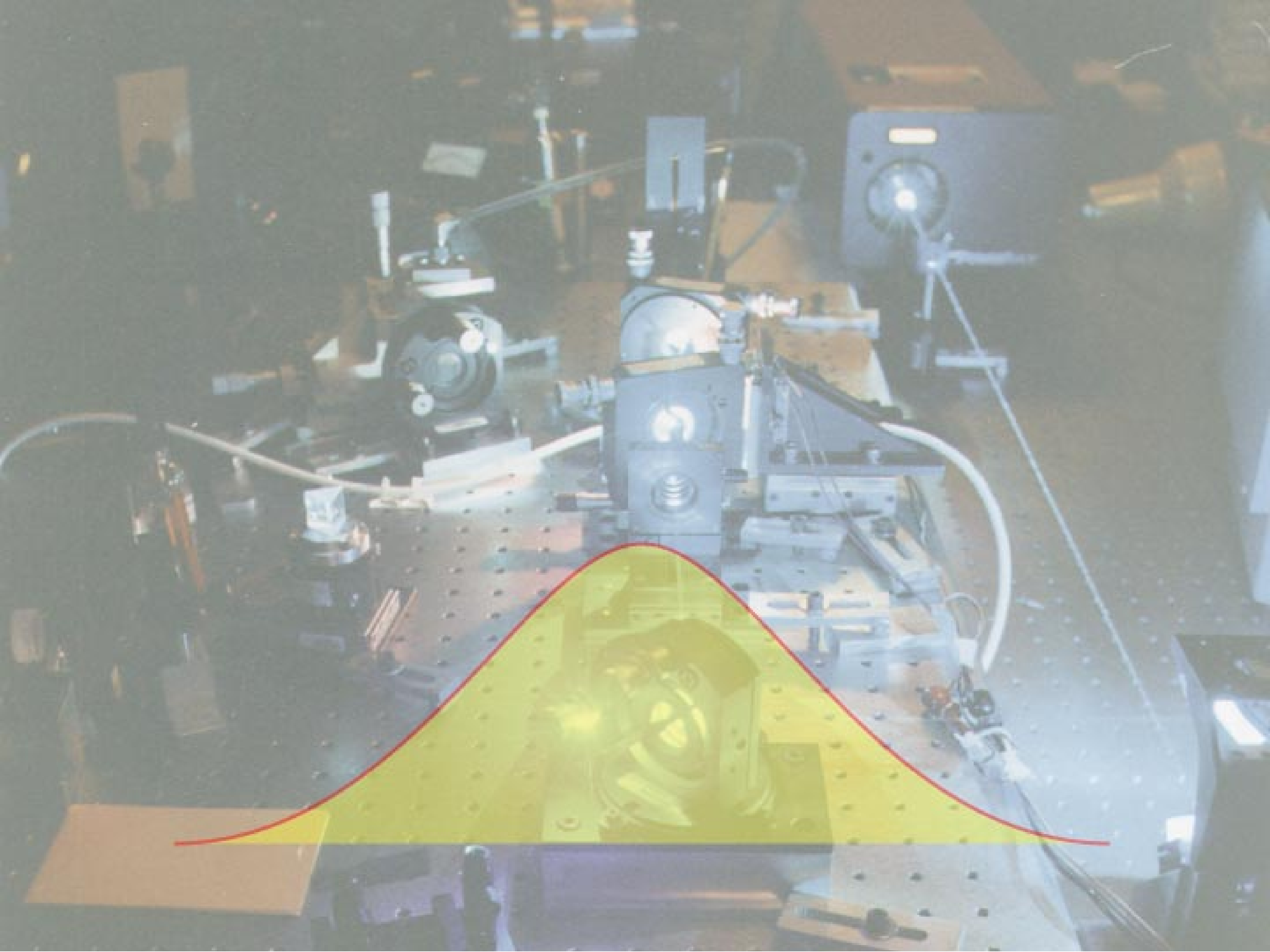
electronic collision

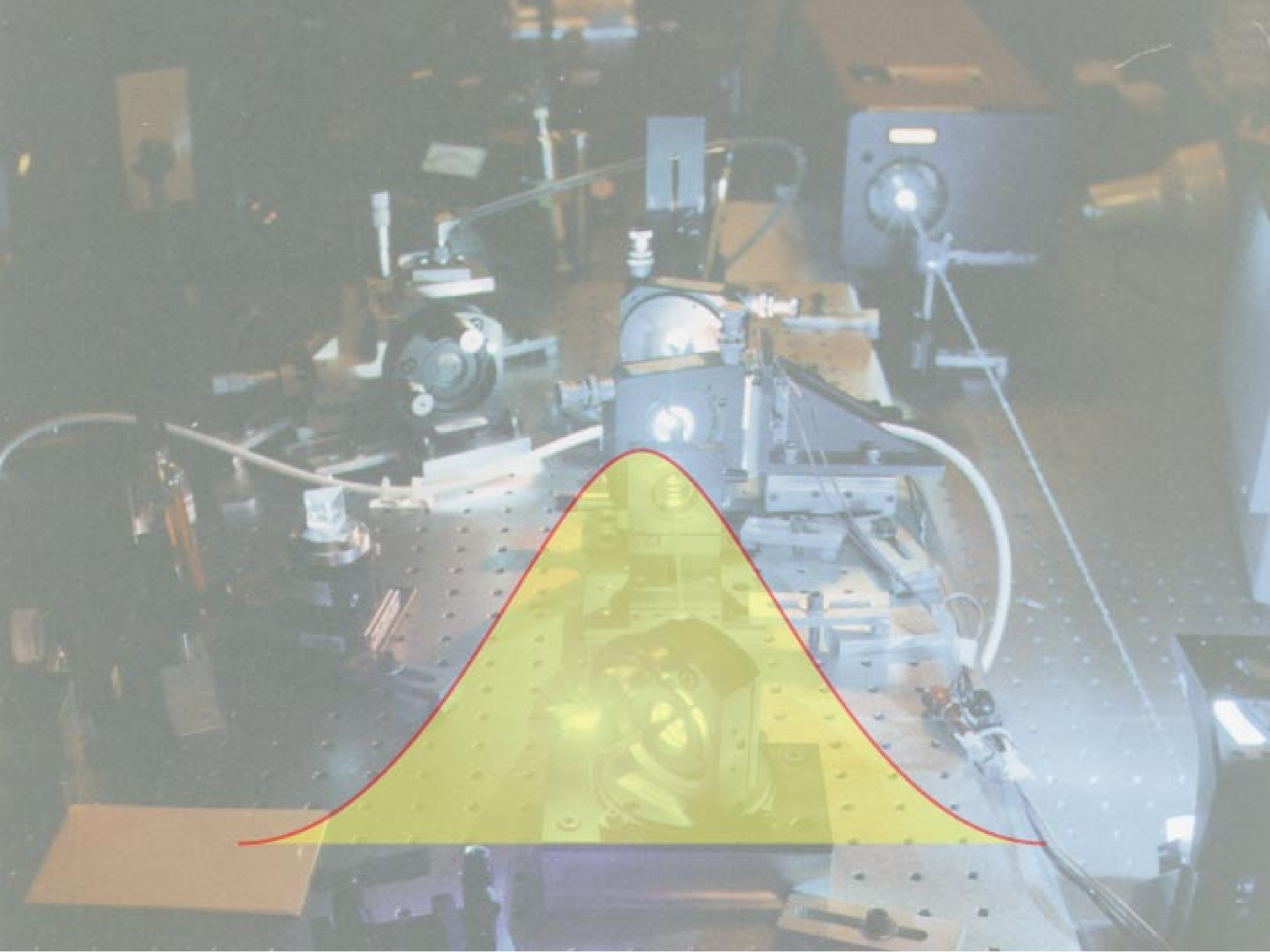
100 atomic layers

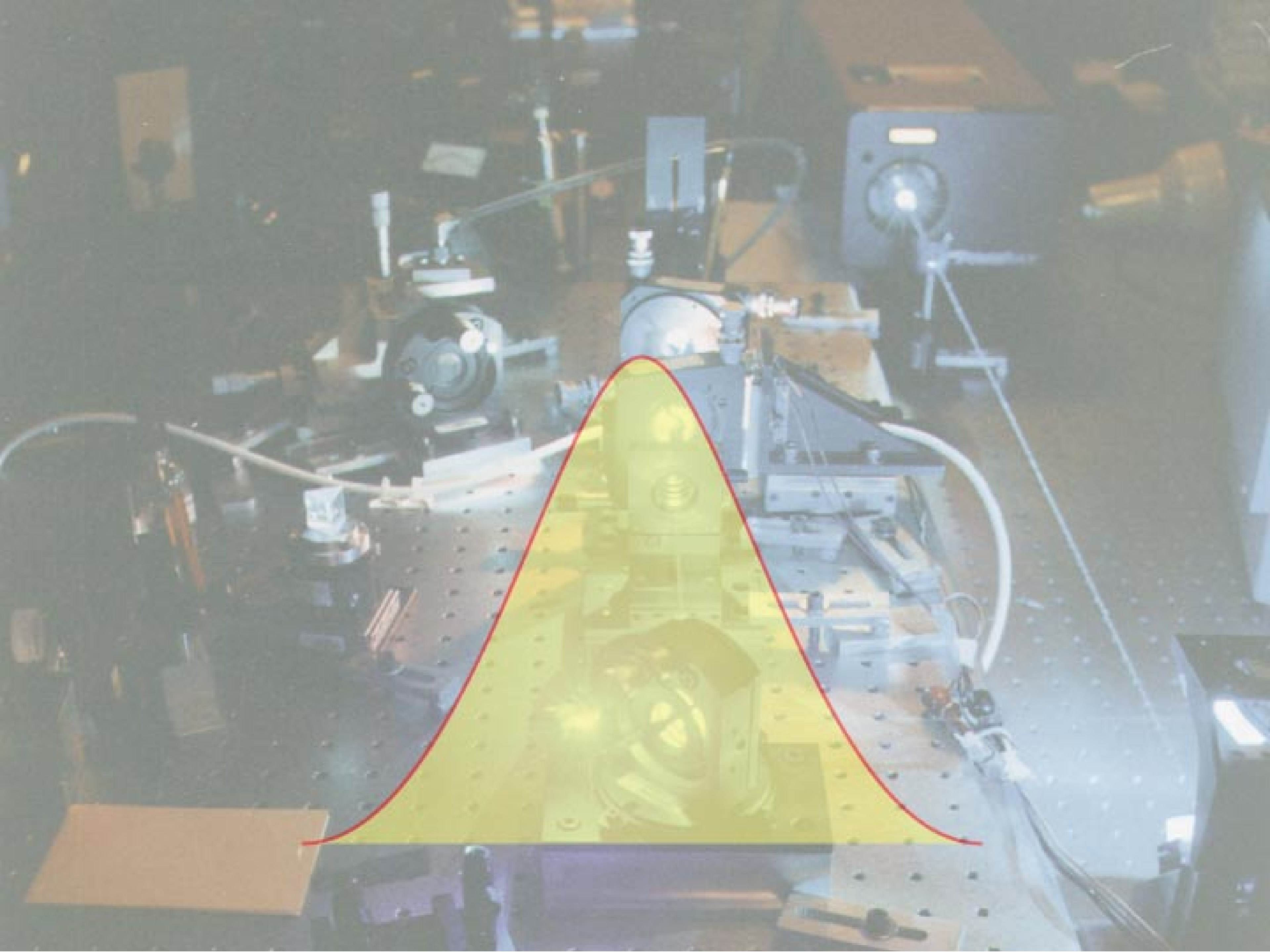
10^{-15} s

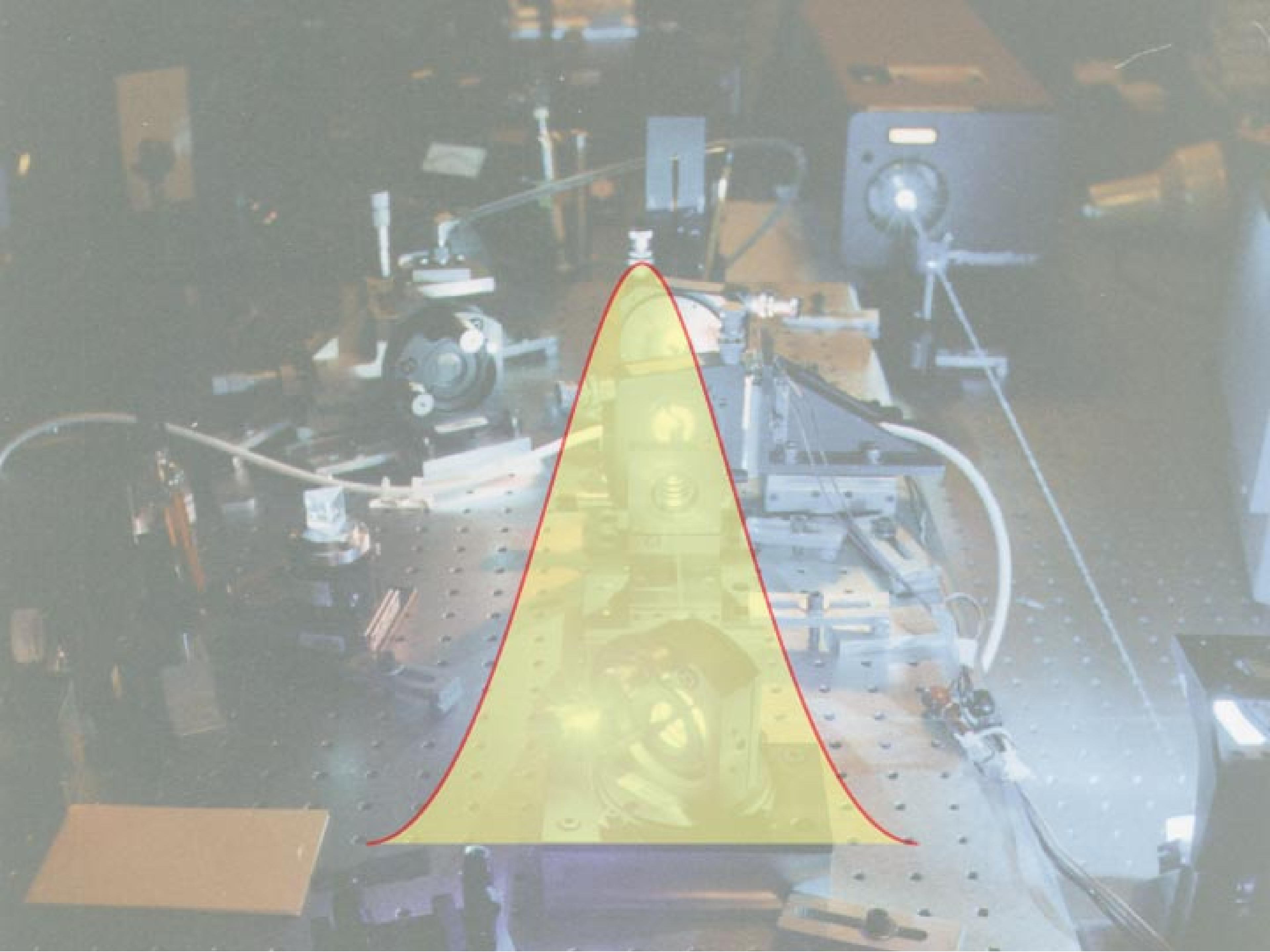
one “femtosecond”

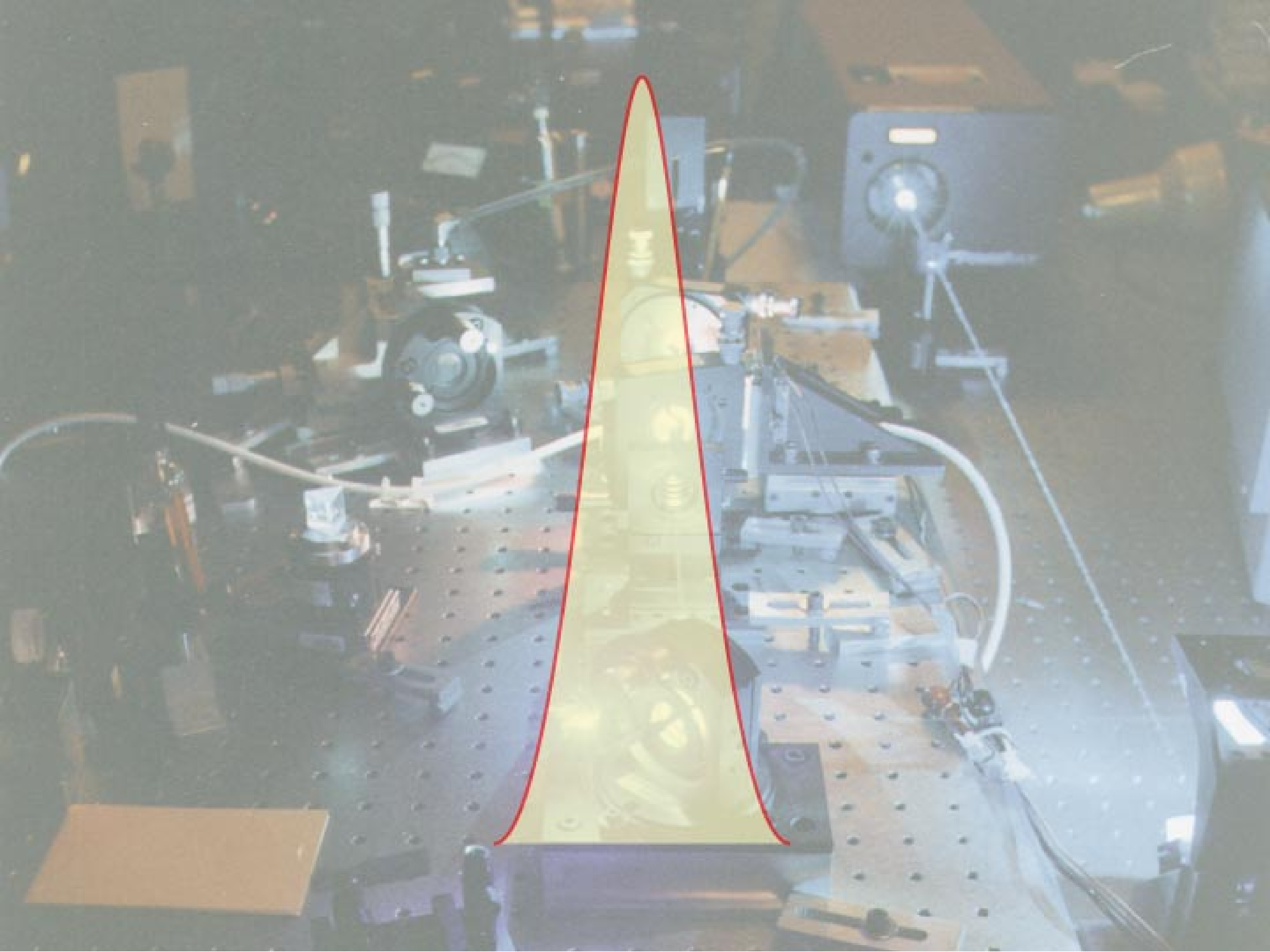

G1

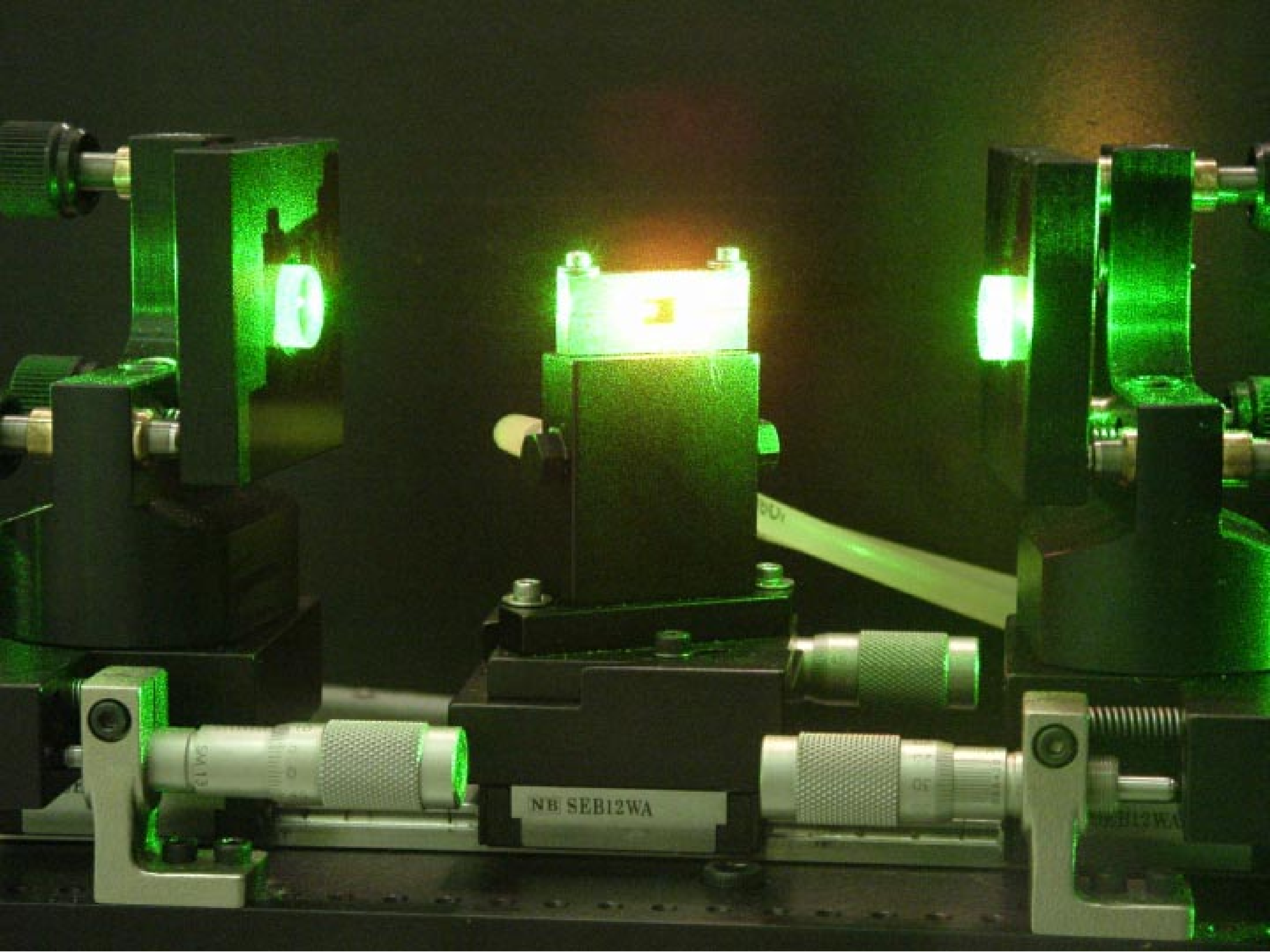


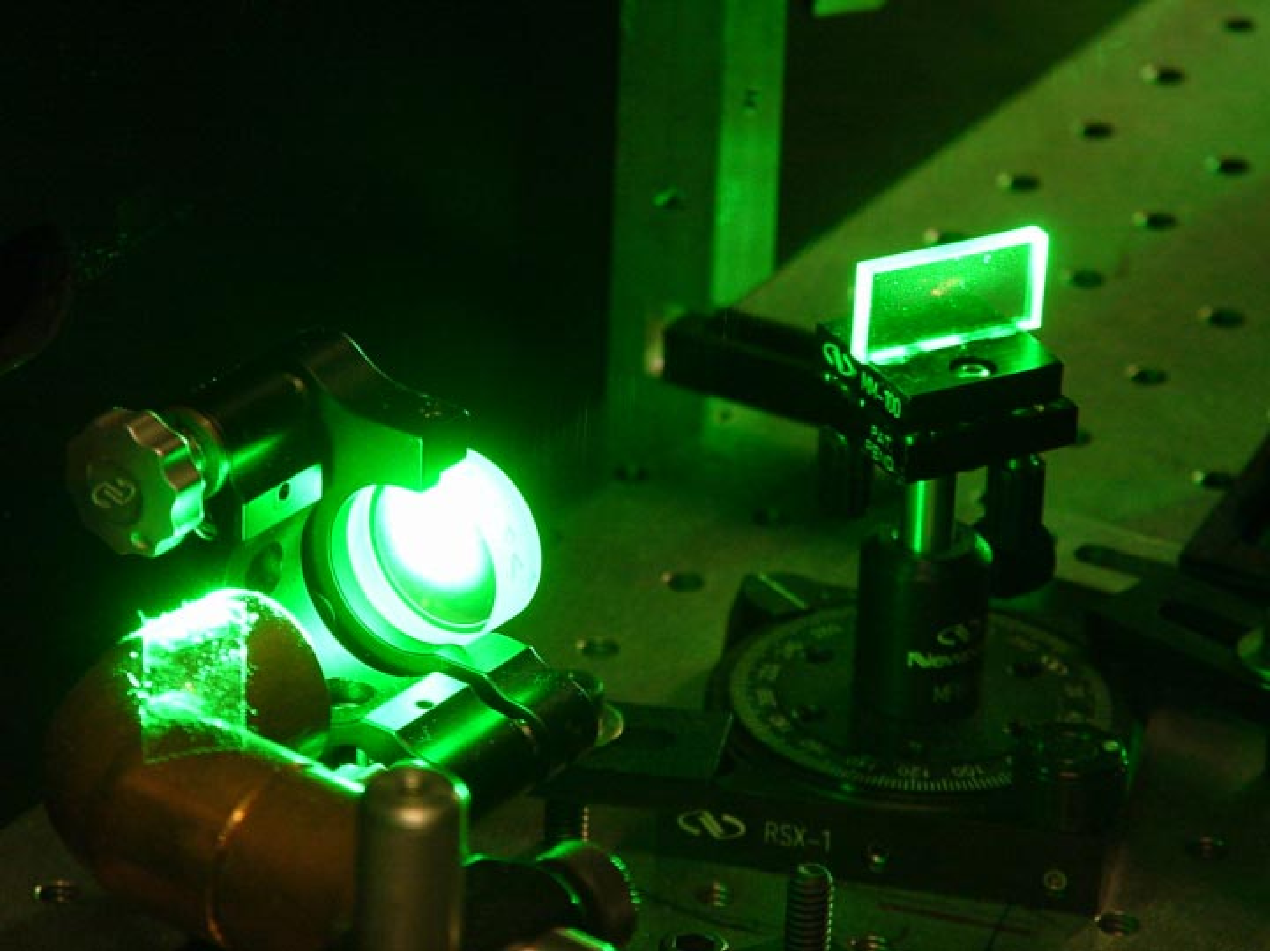









NB SEB12WA
SEB12WA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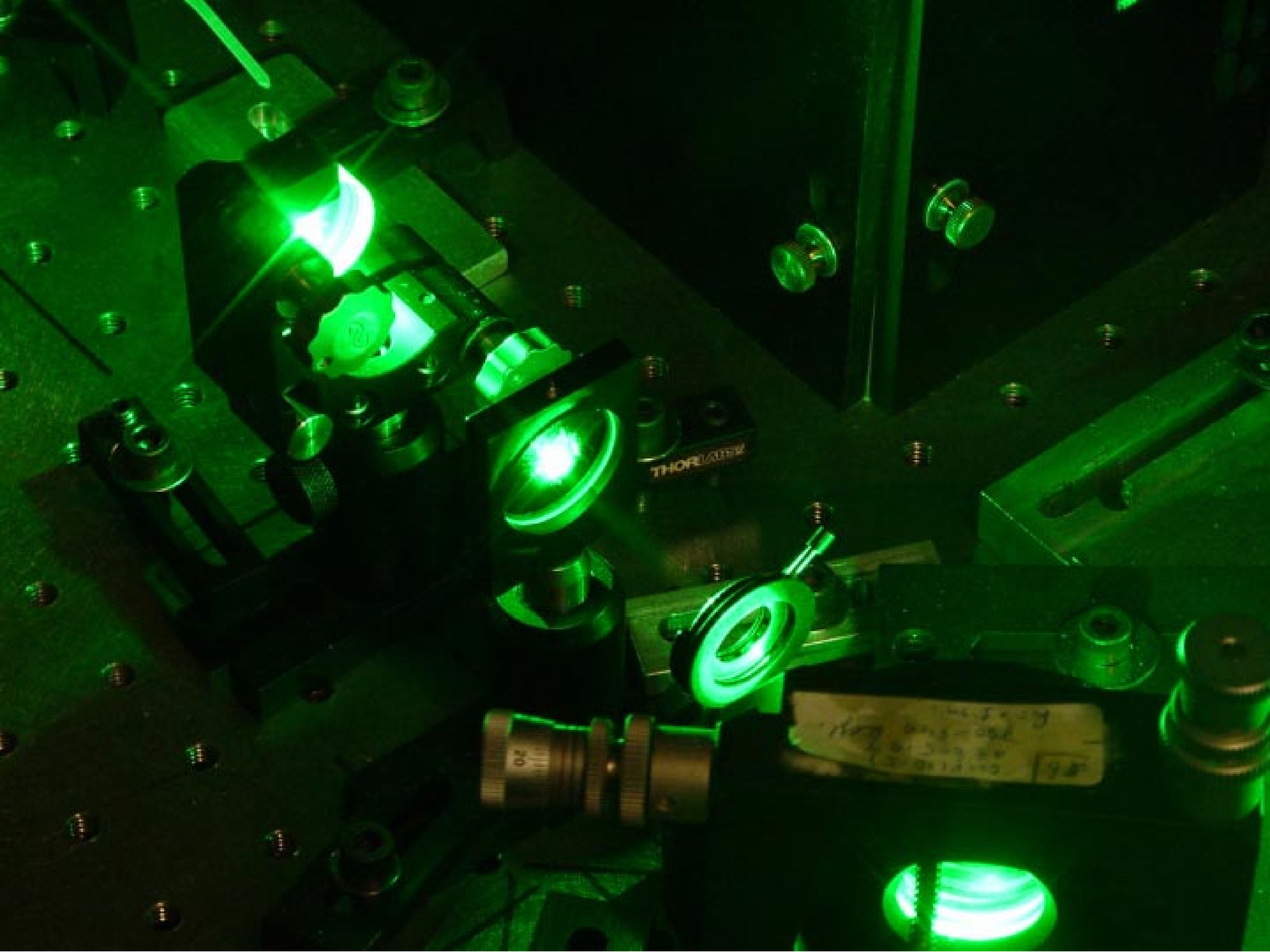
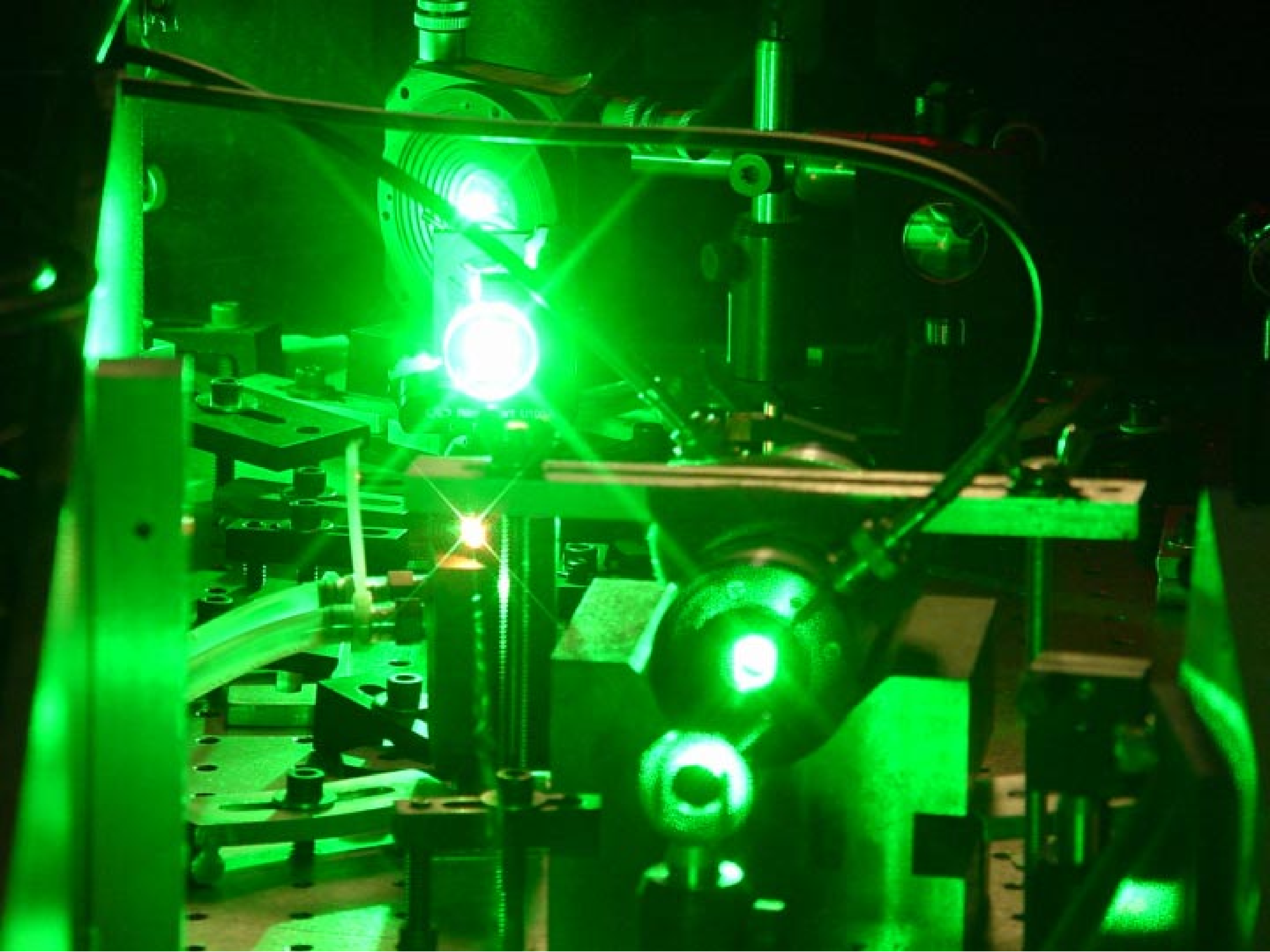
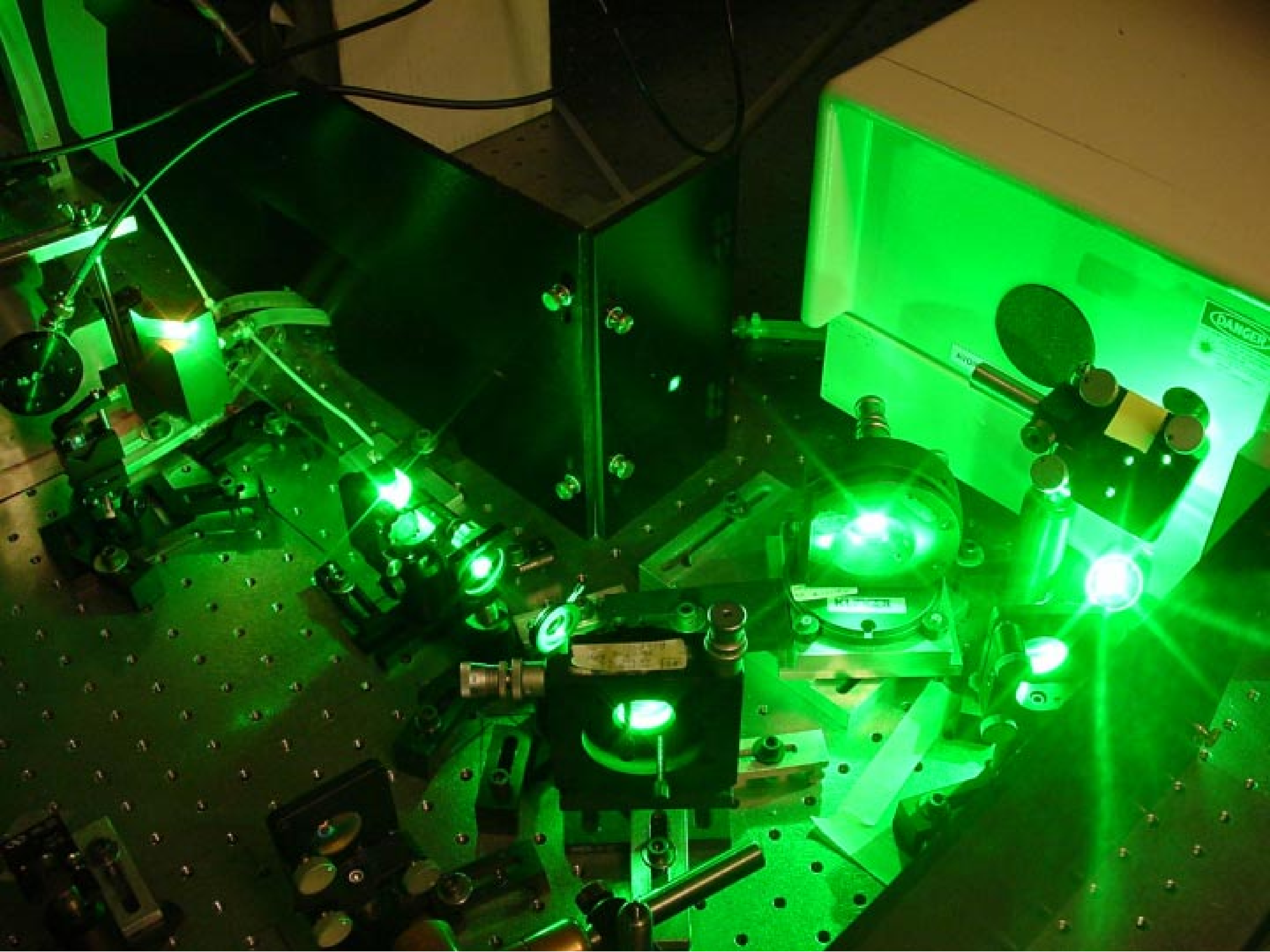
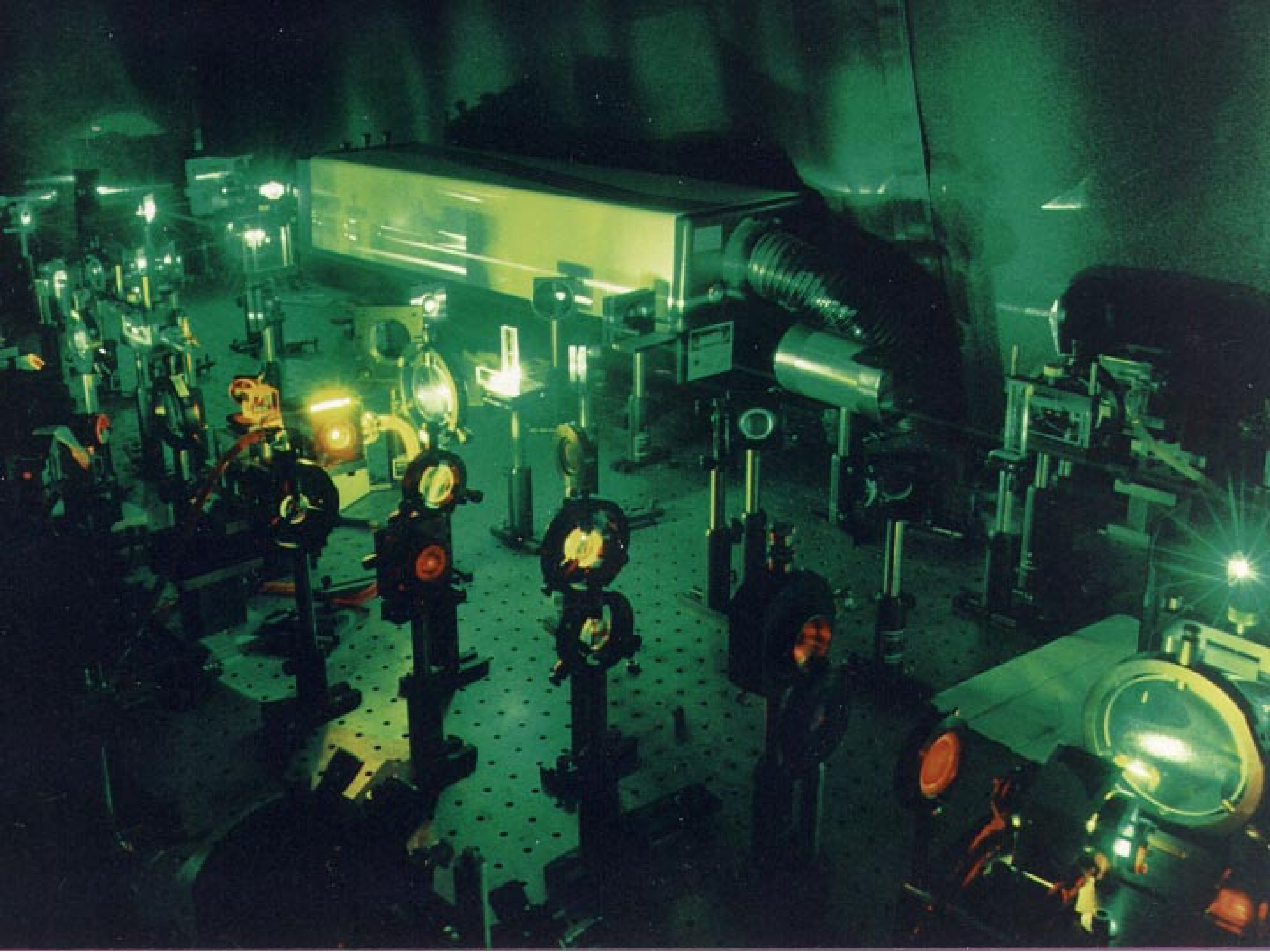
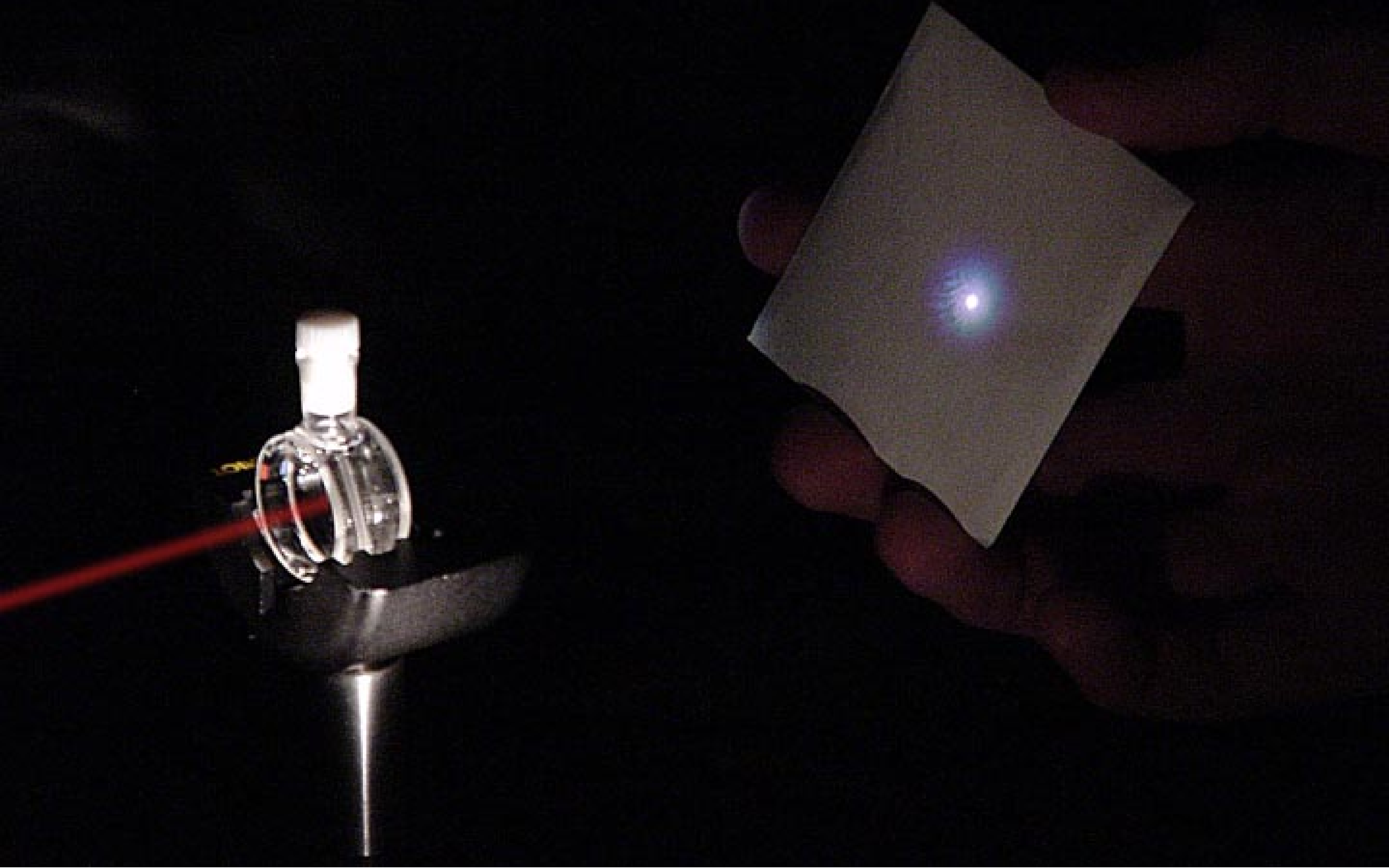
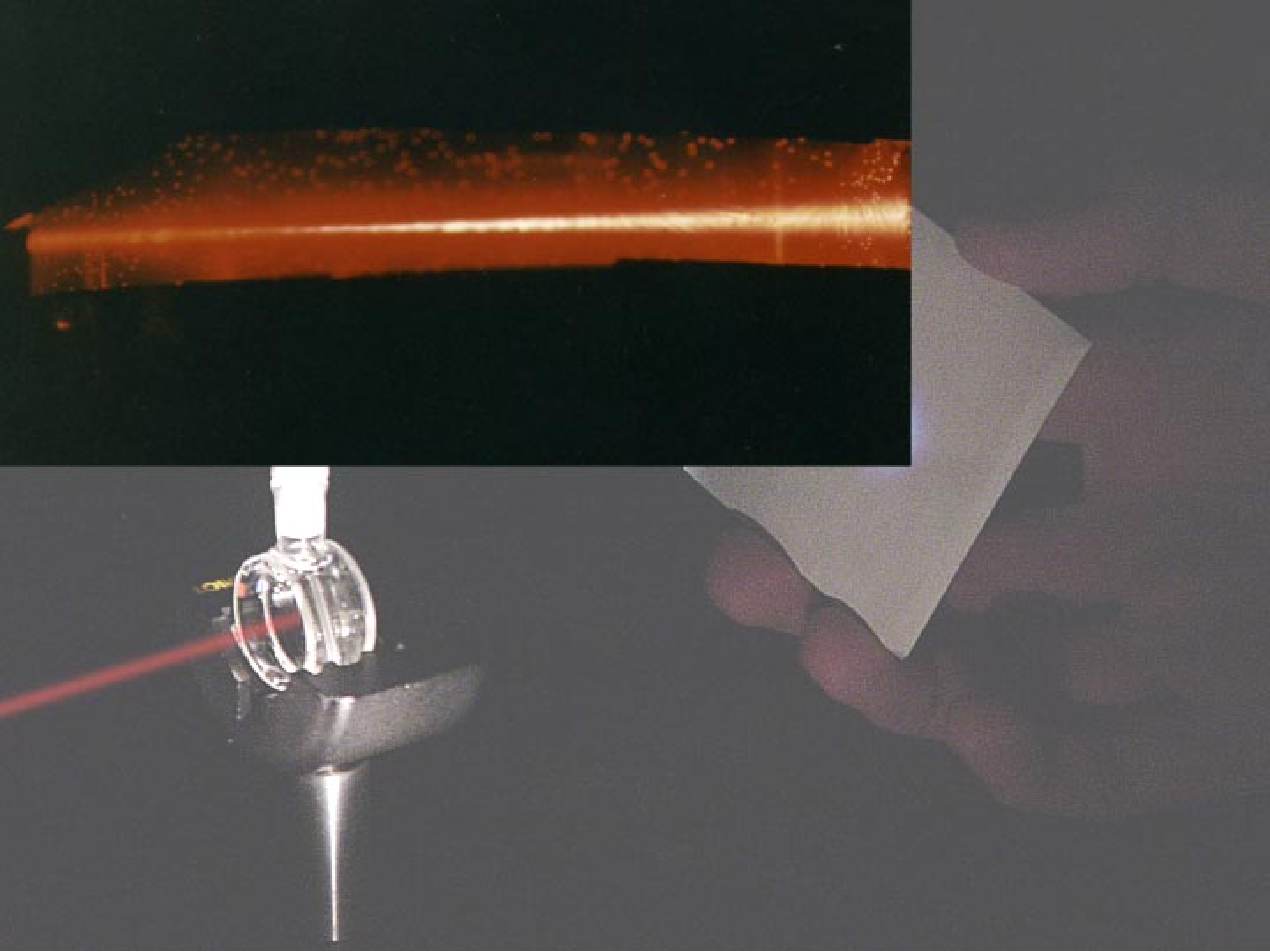

THORLABS
20

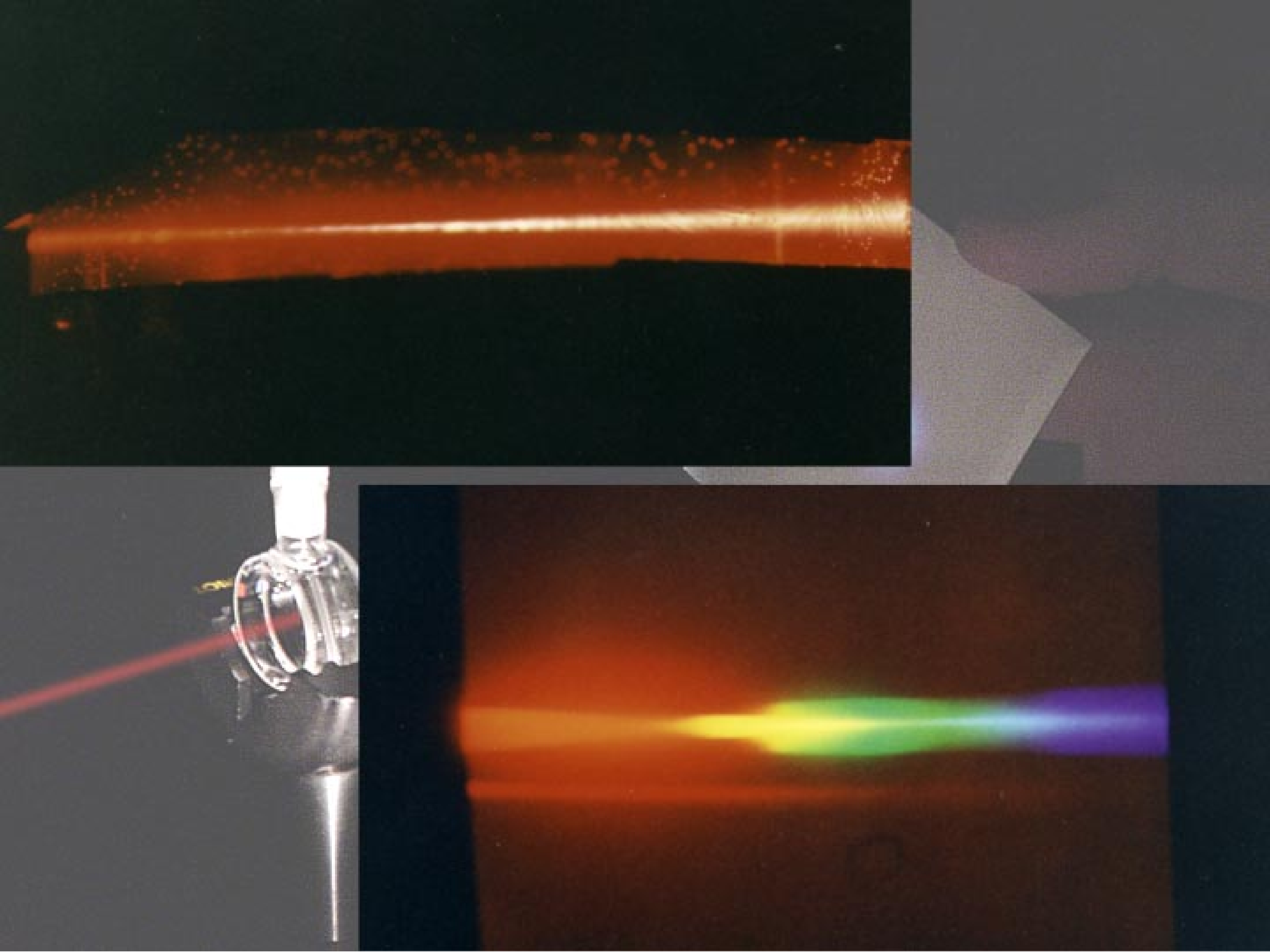


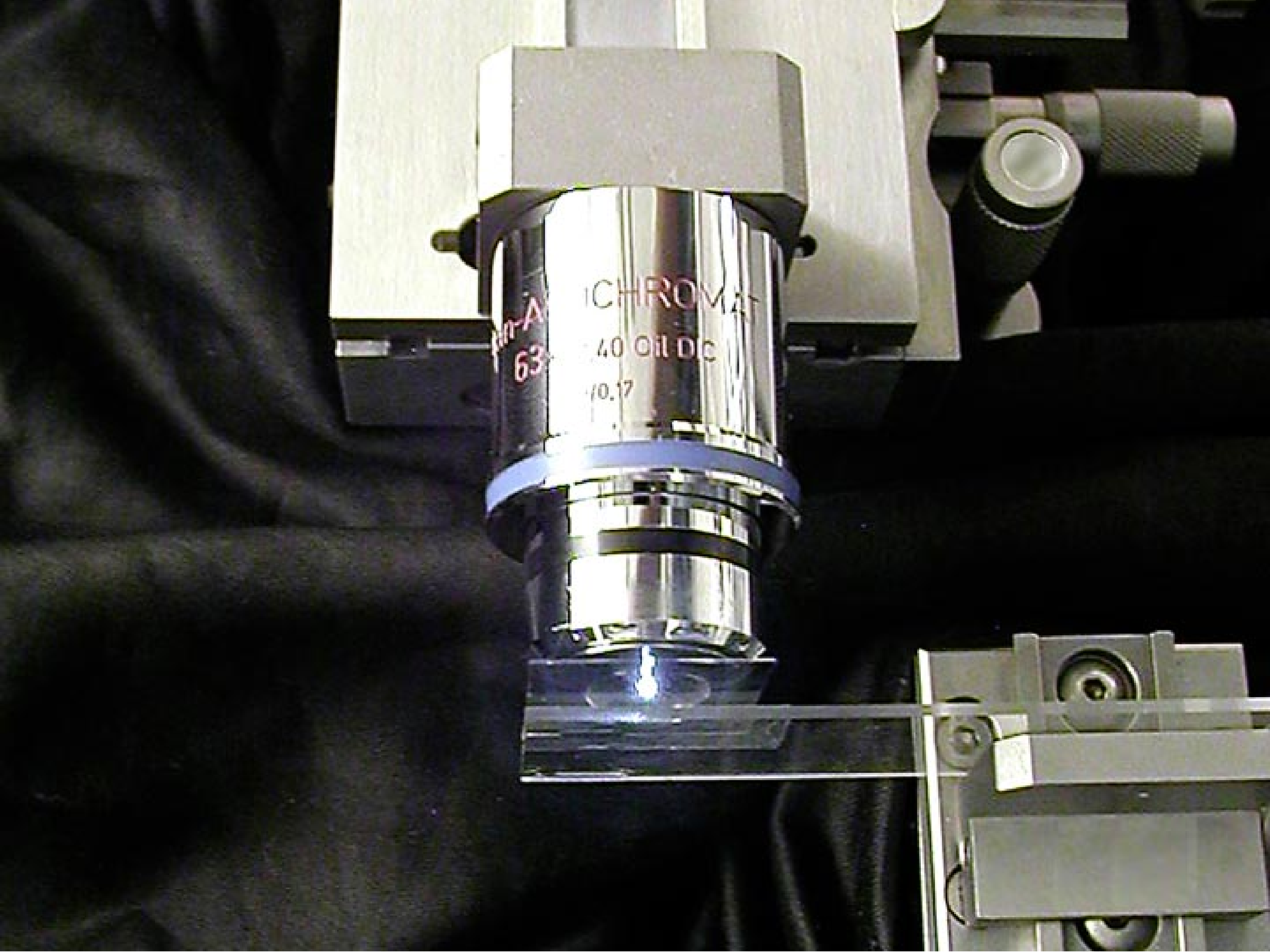

DANGER

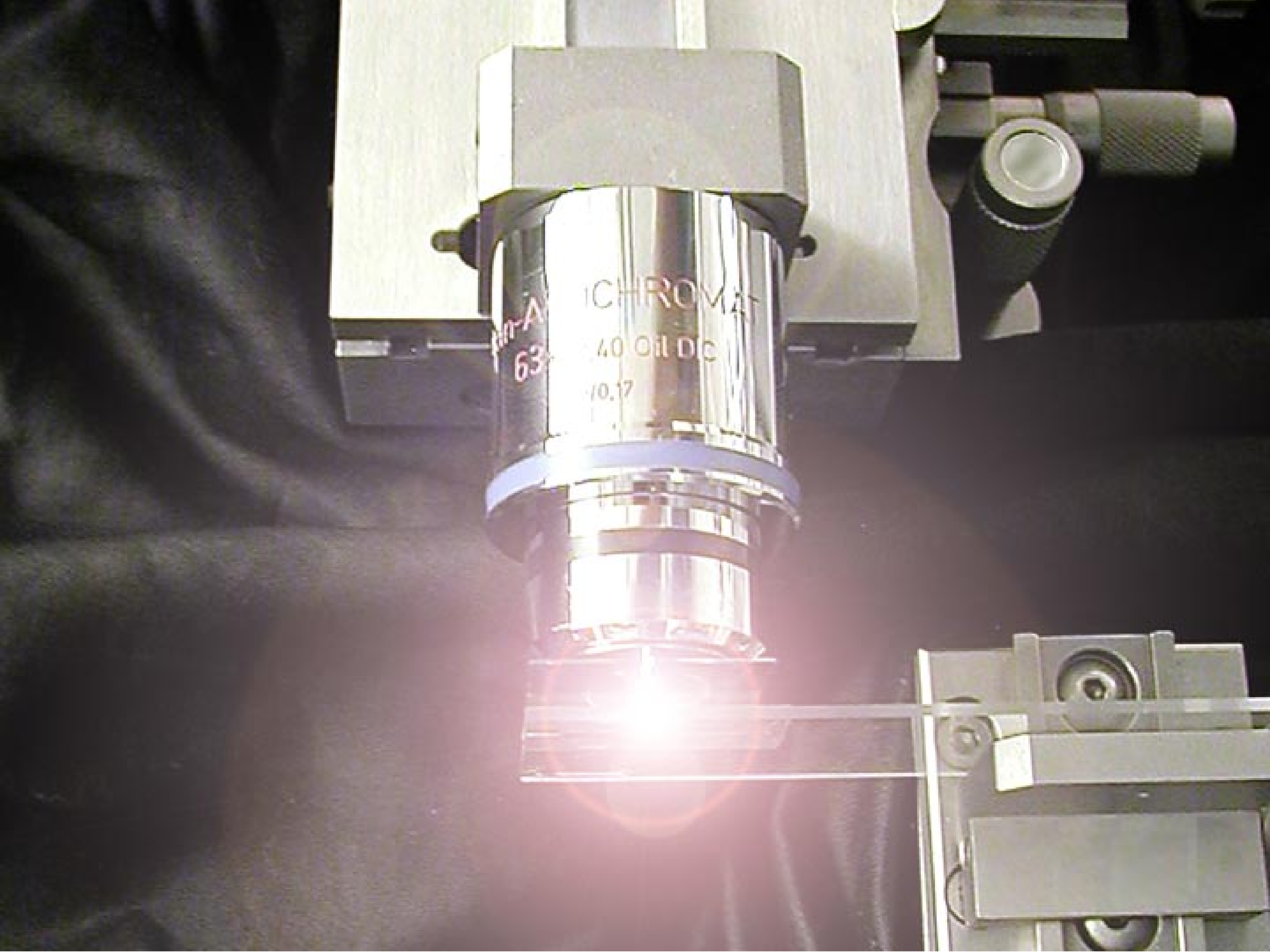


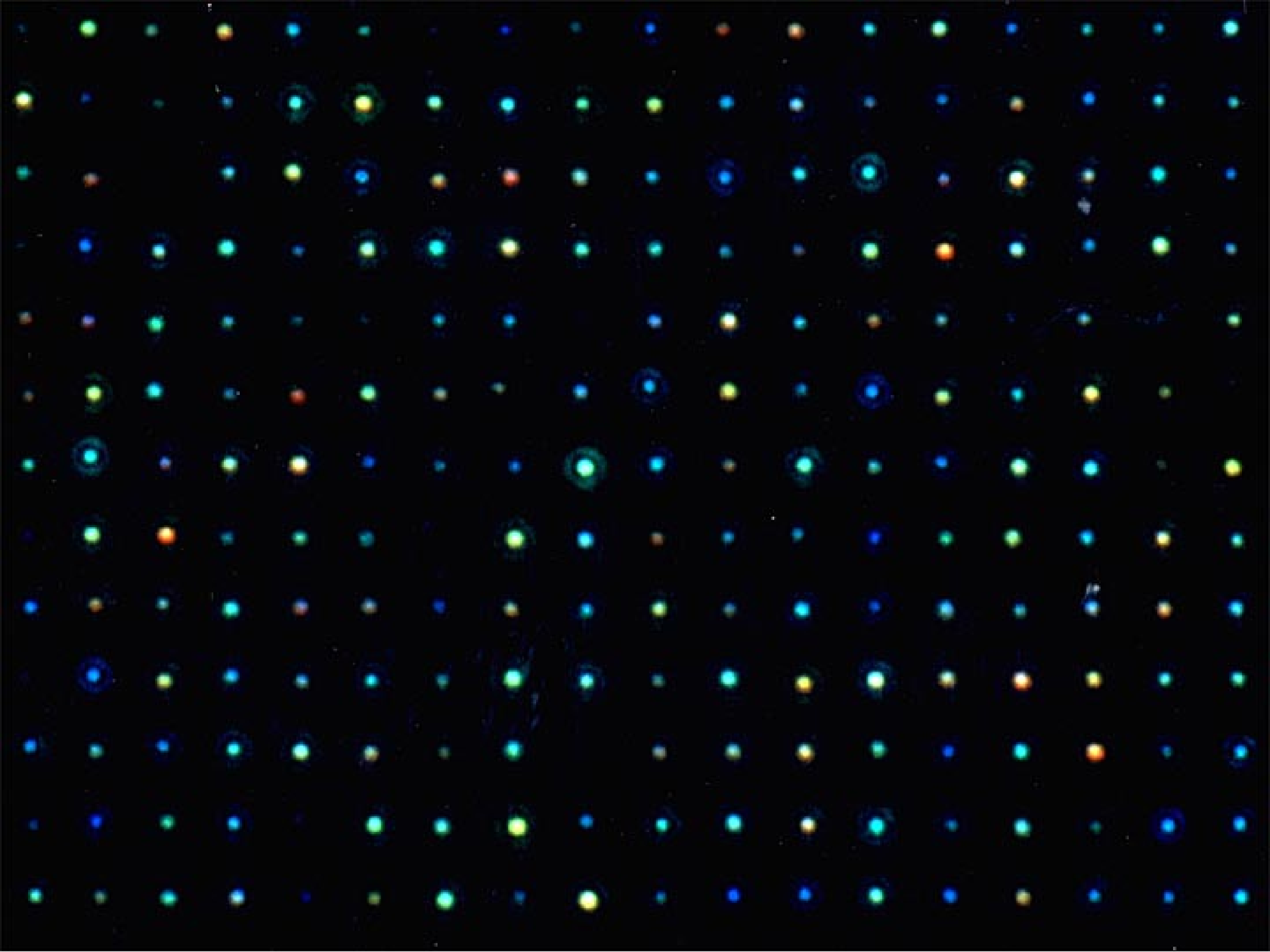


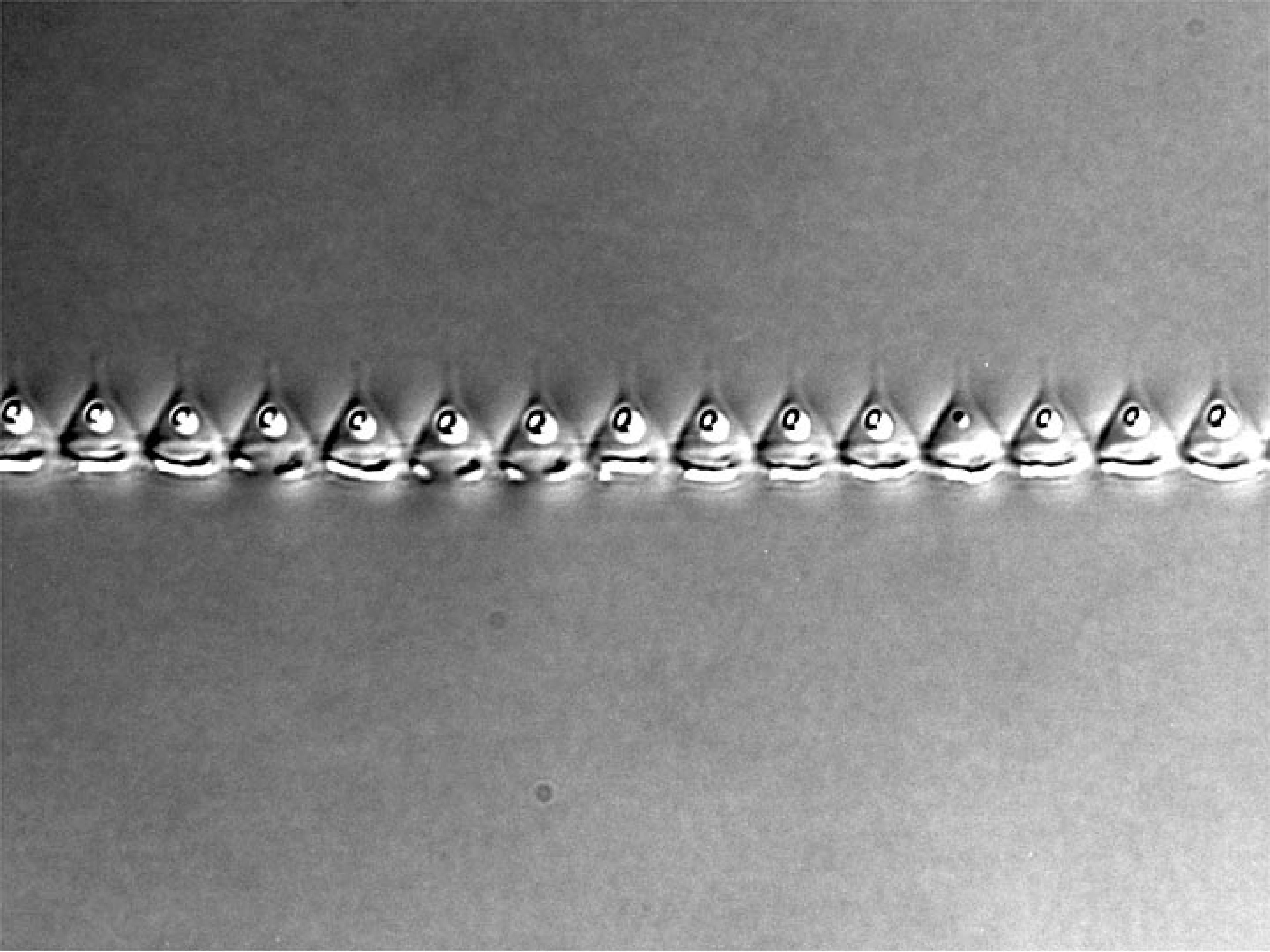


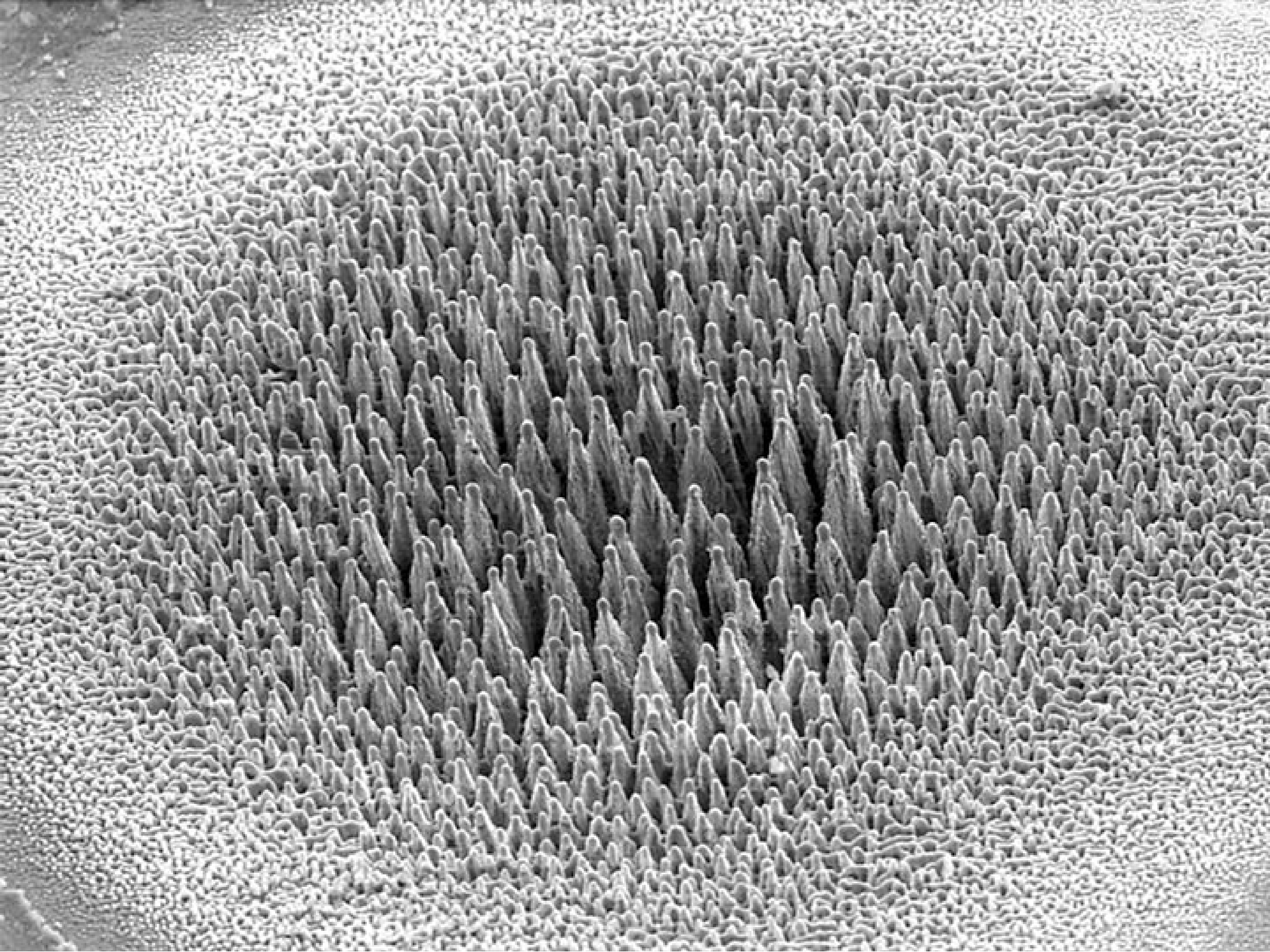


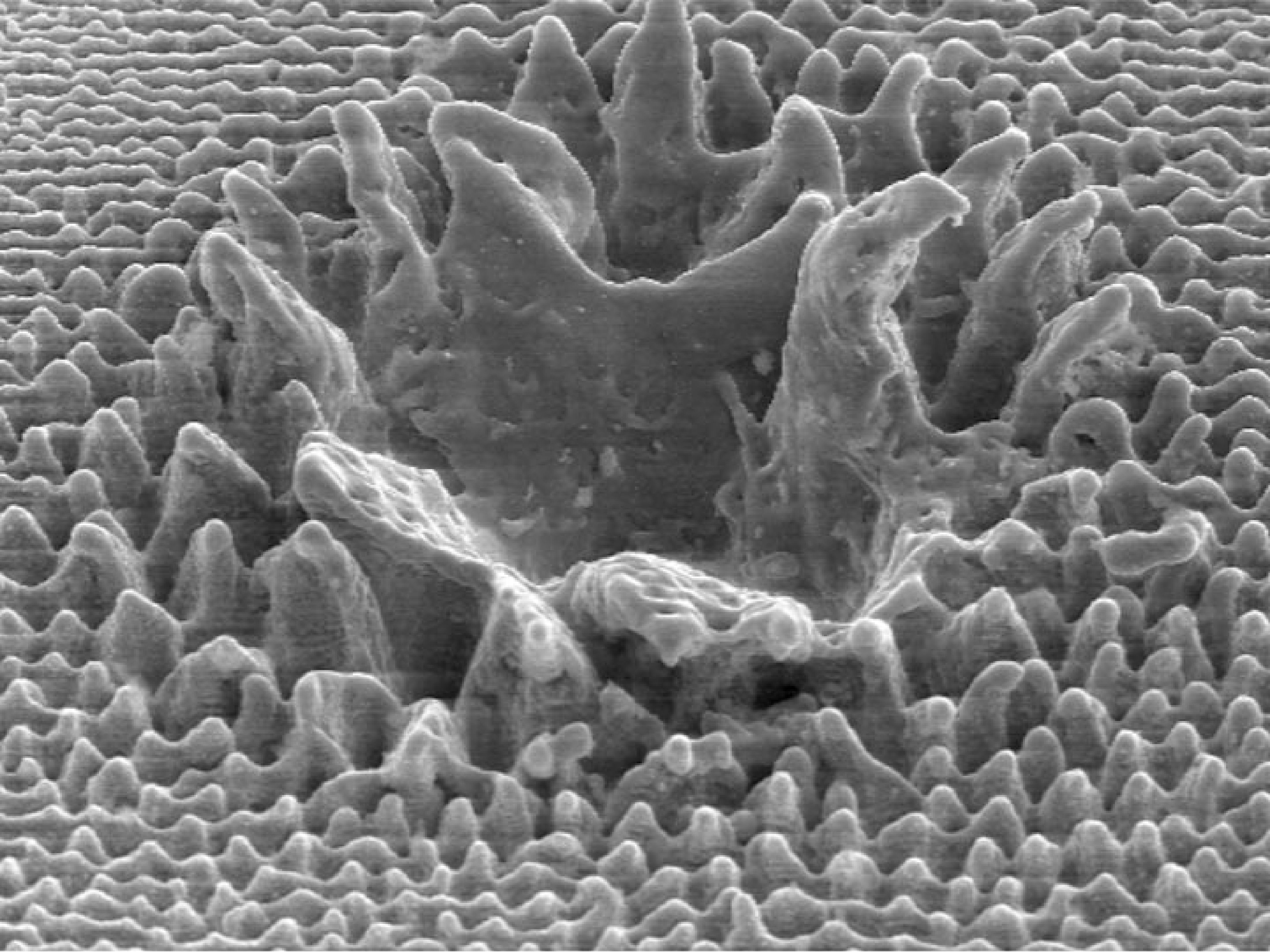

CHROMAT
40 Oil DIC
/0.17

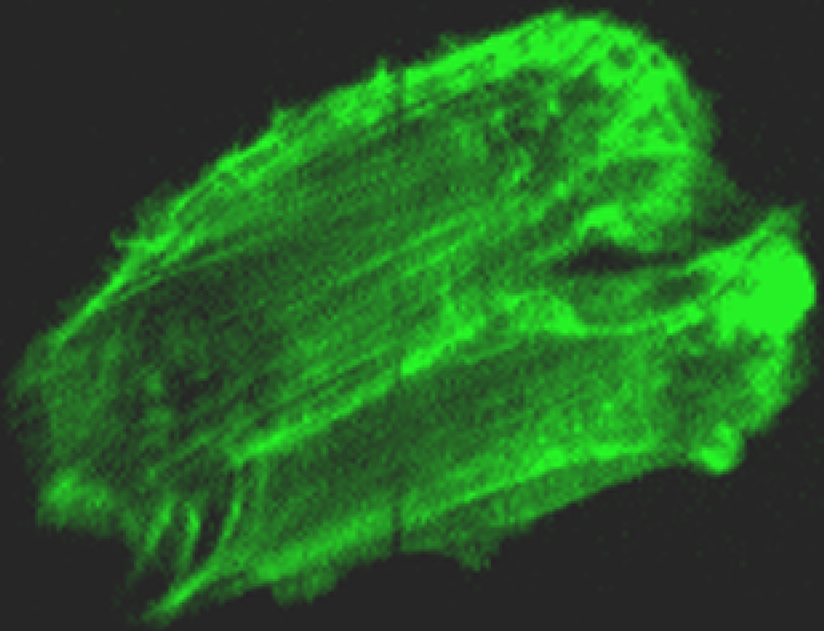

n-A CHROMAT
63 40 Oil DIC
/0.17









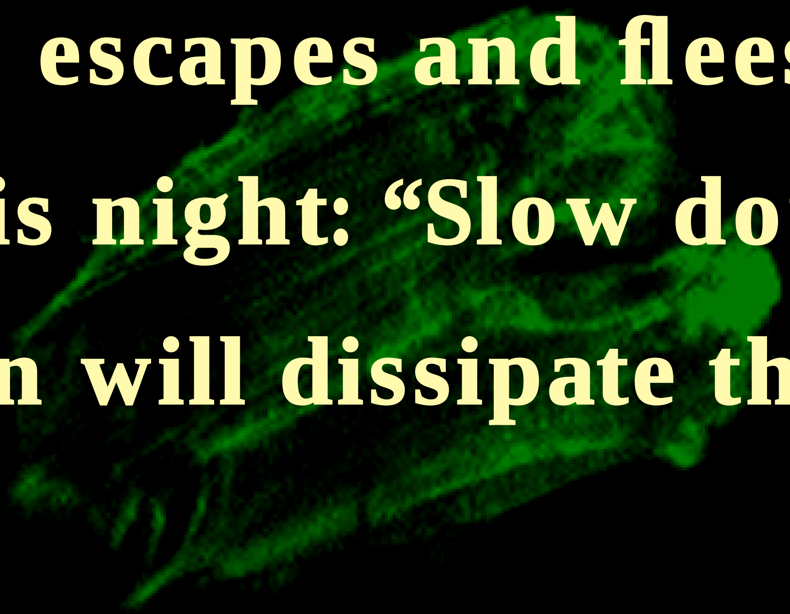


Oh, Time, suspend your flight!
and you, auspicious hours,
suspend your course!
Let us savor the fleeting joy
of our most beautiful days!

Alphonse de Lamartine (1817)

Plenty of unhappy ones down here
beg you; fly by for them!
Along with their days
take the worries that consume them;
Forget the happy ones!

Alphonse de Lamartine (1817)



In vain I ask for a few more moments,
But time escapes and flees;
I say to this night: “Slow down,”
but dawn will dissipate the night.

Alphonse de Lamartine (1817)

Special Thanks to:

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For additional information

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