

# Bir yüksek h-indexi yolculuđu

Kerem Cankoçak

(NEU Fizik)

12 Nisan 2023

# Bilimsel yayınlar ve "etki"

Kraliyet Derneği

→ *Catalogue of Scientific Papers* (1867)

Günümüzde binlerce bilimsel dergi var  
(2012'de 28.100 adet olduğu saptanmış)

Bilimsel yayının ya da kişinin etkisini  
ölçmek için pek çok yöntemler ortaya  
atılmış:

Citation Analysis; Altmetrics; i10-index,  
impact factor, G-index;... ve **H-index**



A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE

"To the wild ground  
Of Nature trust the mind which builds for eye."—WORDSWORTH

THURSDAY, NOVEMBER 4, 1869

*NATURE: APHORISMS BY GOETHE*

**N**ATURE: We are surrounded and embraced by her: powerless to separate ourselves from her, and powerless to penetrate beyond her.

Without asking, or warning, she snatches us up into her circling dance, and whisks us on until we are tired, and drop from her arms.

She is ever shaping new forms: what is, has never yet been; what has been, comes not again. Everything is new, and yet nought but the old.

We live in her midst and know her not. She is incessantly speaking to us, but betrays not her secret. We constantly act upon her, and yet have no power over her.

The one thing she seems to aim at is Individuality; yet she cares nothing for individuals. She is always building up and destroying; but her workshop is inaccessible.

Her life is in her children; but where is the mother? She is the only artist; working up the most uniform material into utter opposites; striving, without a trace of effort, at perfection, at the most exact precision, though always veiled under a certain softness.

Each of her works has an essence of its own; each of her phenomena a special characterisation: and yet their diversity is in unity.

She performs a play; we know not whether she sees it herself, and yet she acts for us, the lookers-on.

Incessant life, development, and movement are in her, but she advances not. She changes for ever and ever, and rests not a moment. Quietude is inconceivable to her, and she has laid her curse upon rest. She is firm. Her steps are measured, her exceptions rare, her laws unchangeable.

She has always thought and always thinks; though not as a man, but as Nature. She broods over an

all-comprehending idea, which no searching can find out.

Mankind dwell in her and she in them. With all men she plays a game for love, and rejoices the more they win. With many, her moves are so hidden, that the game is over before they know it.

That which is most essential is still Nature; the stupidest philistinism has a touch of her genius. Whoso cannot see her everywhere, sees her nowhere rightly.

She loves herself, and her innumerable eyes and affections are fixed upon herself. She has divided herself that she may be her own delight. She causes an endless succession of new capacities for enjoyment to spring up, that her insatiable sympathy may be assuaged.

She rejoices in illusion. Whoso destroys it in himself and others, him she punishes with the sternest tyranny. Whoso follows her in faith, him she takes as a child to her bosom.

Her children are numberless. To none is she altogether miserly; but she has her favourites, on whom she squanders much, and for whom she makes great sacrifices. Over goodness she spreads her shield.

She tosses her creatures out of nothingness, and tells them not whence they came, nor whither they go. It is their business to run, she knows the road. Her mechanism has few springs—but they never wear out, are always active and manifold.

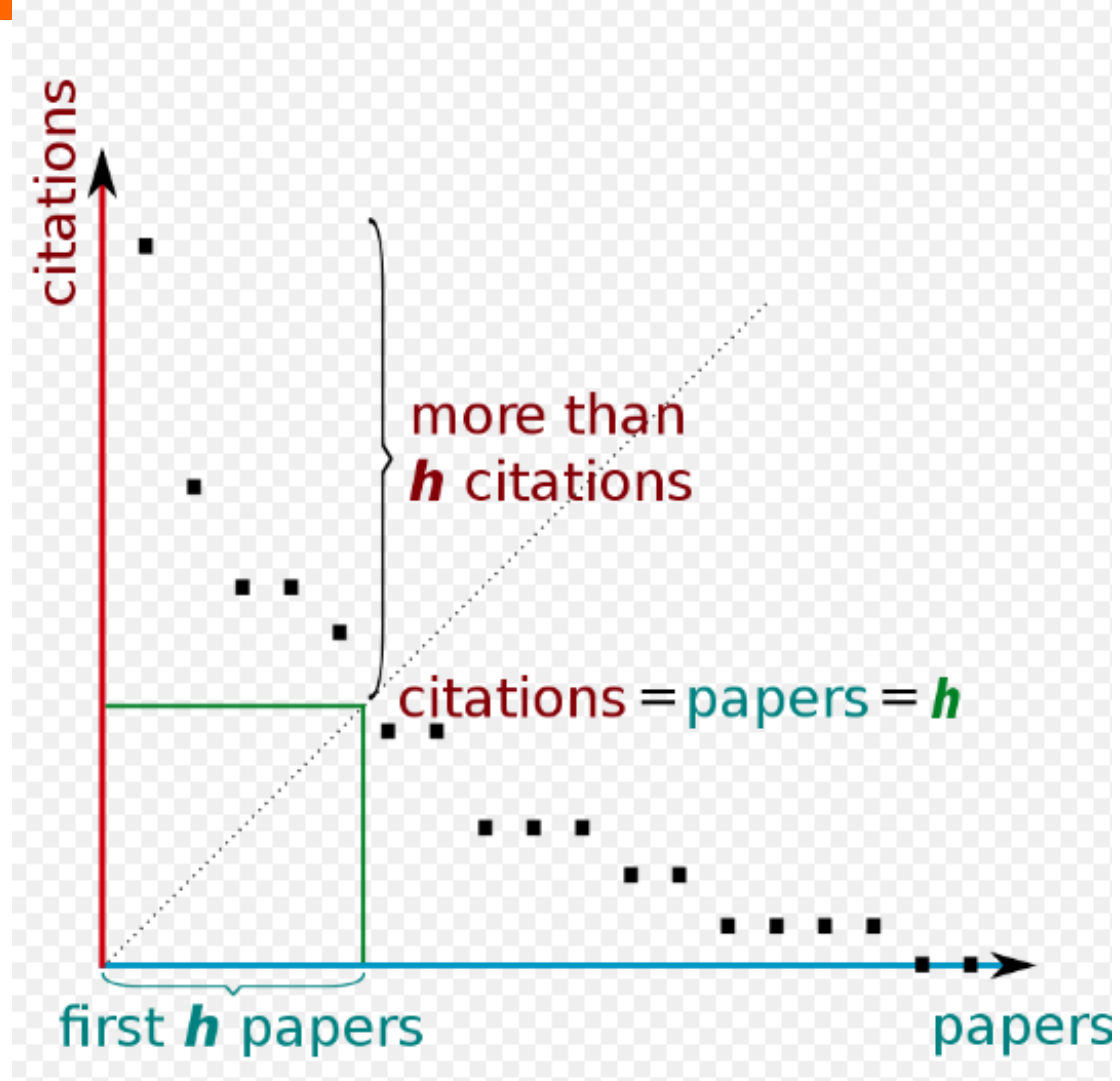
The spectacle of Nature is always new, for she is always renewing the spectators. Life is her most exquisite invention; and death is her expert contrivance to get plenty of life.

She wraps man in darkness, and makes him for ever long for light. She creates him dependent upon the earth, dull and heavy; and yet is always shaking him until he attempts to soar above it.

# En popular ölçüm: H-index

UC San Diego 'da kuramsal fizikçi olarak çalışan Jorge E. Hirsch, tarafından 2005'te önerilen h-indexi

Web of Science, Scopus ve Google Akademik'te H indeks değerleri farklılık gösterir. Bunun da nedeni bahsi geçen kaynakların indekslediği yayın sayısıdır.



**Review affiliation**  
Help colleagues find you.

REVIEW

**Review public access**  
Certain articles should be publicly available.

REVIEW

**Add co-authors**  
We have co-authors suggestions.

ADD



**Kerem Cankocak**

FOLLOW

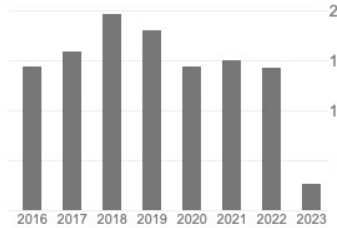
Near East University Research Center of Experimental Health Science  
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fizik

**Cited by**

VIEW

|           | All    | Since |
|-----------|--------|-------|
| Citations | 164052 | 8     |
| h-index   | 190    |       |
| i10-index | 813    |       |



TITLE CITED BY YEAR

- Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC** 12932 \* 2012  
S Chatrchyan, V Khachatryan, AM Sirunyan, A Tumasyan, W Adam, ...  
 Physics Letters B 716 (1), 30-61
- Event generator tunes obtained from underlying event and multiparton scattering measurements** 4593 \* 2016  
V Khachatryan, AM Sirunyan, A Tumasyan, W Adam, E Asilar, T Bergauer, ...  
 The European Physical Journal C 76, 1-52
- Precise determination of the mass of the Higgs boson and tests of compatibility of** 3487 \* 2015

Public access

VIEW

There is no ideal criteria



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Add co-authors

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**Kerem Cankocak**

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Near East University Research Center of Experimental Health Science

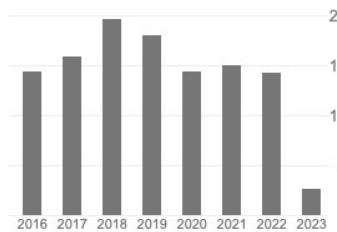
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- [Precise determination of the mass of the Higgs boson and tests of compatibility of](#) 3487 \* 2015



scholar.google.com/citations?user=qc6CJj

Bookmarks Bilimin istismarı v... Ezginin Günlüğü |...



**Albert Einstein**

Institute of Advanced Studies, Princeton

No verified email

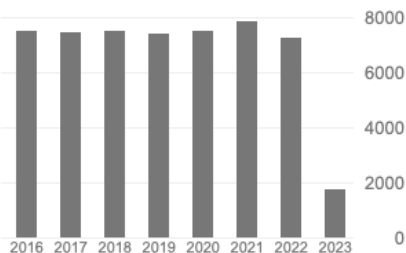
Physics

FOLLOW

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VIEW ALL

|           | All    | Since 2018 |
|-----------|--------|------------|
| Citations | 159942 | 39393      |
| h-index   | 123    | 65         |
| i10-index | 381    | 193        |



TITLE CITED BY YEAR

- [Can quantum-mechanical description of physical reality be considered complete?](#) 23046 1935  
A Einstein, B Podolsky, N Rosen  
Physical Review 47 (10), 777
- [Über einen die Erzeugung und Verwandlung des Lichtes betreffenden heuristischen Gesichtspunkt](#) 20091 \* 1905  
A Einstein  
Ann. Phys. 17, 132-148
- [On the movement of small particles suspended in stationary liquids required by the molecular-kinetic theory of heat](#) 17774 \* 1905  
A Einstein  
Annalen der Physik 17, 549-560

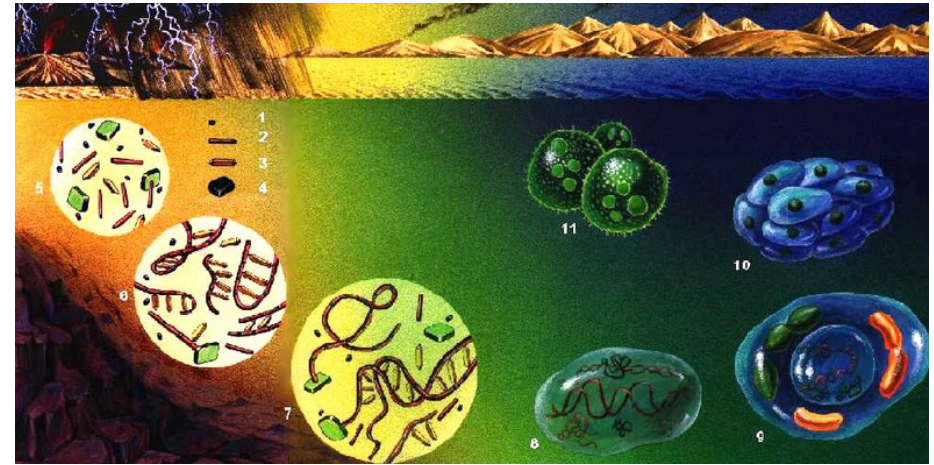
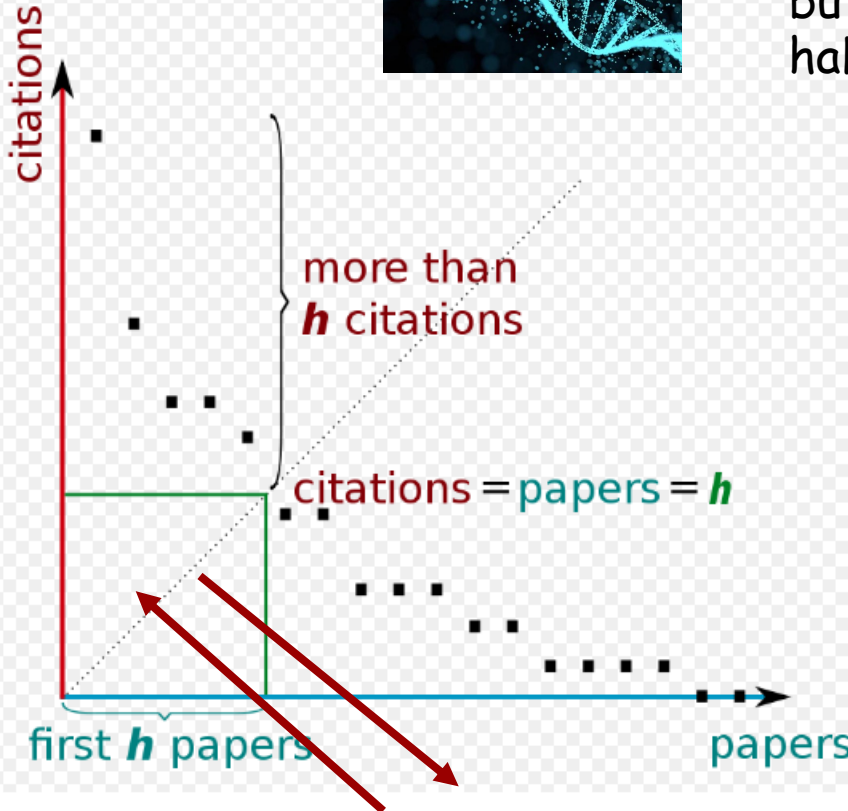
# Neden h-index?

## Çünkü en uygun olan hayatta kalıyor

Dünyadaki canlılığın evrimine benzer bir olgu



DNA bir kere ortaya çıkınca ilkel çorbadaki bütün besinleri tüketip ve tek başına dünyaya hakim oldu...



DNA  $\leftrightarrow$  h-index

Geri besleme mekanizması: Ana akım araştırmalar; proje destekleri; ekip çalışması



# Ekip çalışmasının doruk noktası:CERN

**1952** Conseil Européen pour la Recherche Nucléaire / European Council for Nuclear Research  
/ **Avrupa Nükleer Araştırma Konseyi**

**1954** Organisation Européenne pour la Recherche Nucléaire / Avrupa Nükleer Araştırma  
Organizasyonu

**Kurucu 12 Avrupa ülkesi (1954)**

Almanya, Belçika, Danimarka, Fransa, Hollanda, İngiltere, İsveç, İsviçre, İtalya, Norveç,  
Yugoslavya, Yunanistan

**CERN'e tam üye ülke sayısı 23**

Almanya, Avusturya, Belçika, Bulgaristan, Çek Cumhuriyeti, Danimarka, Finlandiya,  
Fransa, Hollanda, İngiltere, İspanya, İsrail, İsveç, İsviçre, İtalya, Macaristan, Norveç,  
Polonya, Portekiz, Romanya, Sırbistan, Slovakya, Yunanistan

**CERN' tam üyelik ön aşamasında asosiye üye ülke sayısı 2**

Güney Kıbrıs, Slovenya, Estonya

**CERN'e asosiye üye ülke sayısı 2**

Hırvatistan, Hindistan, Litvanya, Letonya, Ukrayna, Pakistan, Türkiye

**Gözlemci olarak katılan ülke/kuruluş sayısı 6**

Amerika Birleşik Devletleri, Hindistan, Japonya, Rusya Federasyonu, Avrupa Komisyonu,  
UNESCO

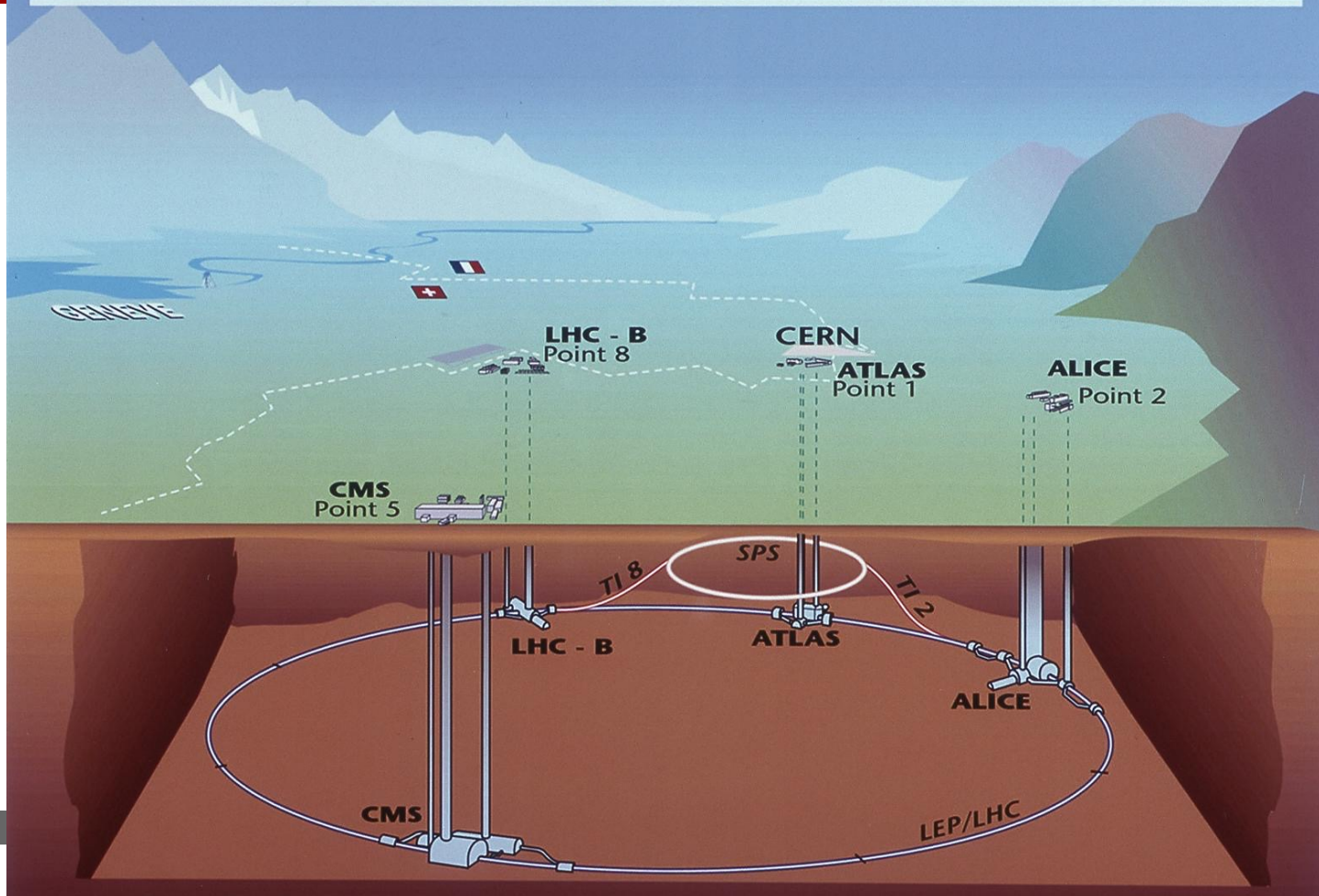
**Bunlara ek olarak 38 ülkeyle işbirliği anlaşması ve 19 ülkeyle çeşitli bilimsel temaslar**

**Dünya genelinden 600'den fazla kurumdan 12.000'den fazla kayıtlı kullanıcı**

# CERN deneyleri

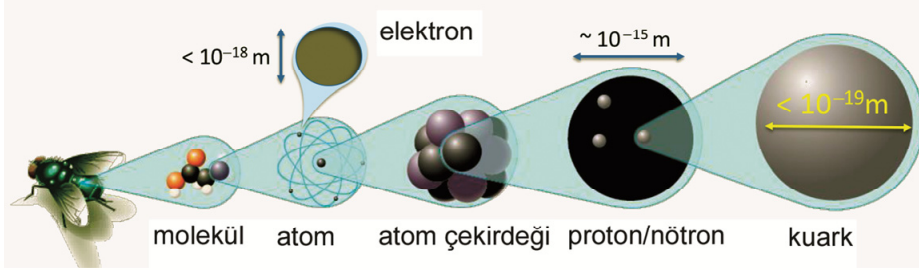


Overall view of the LHC experiments.



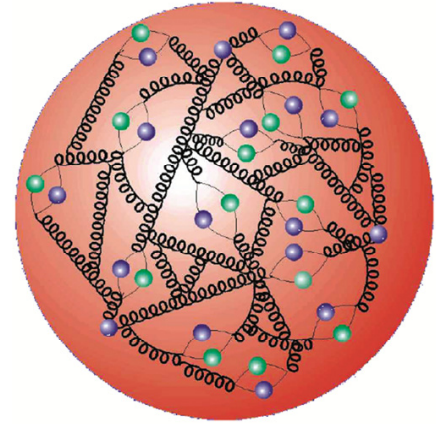
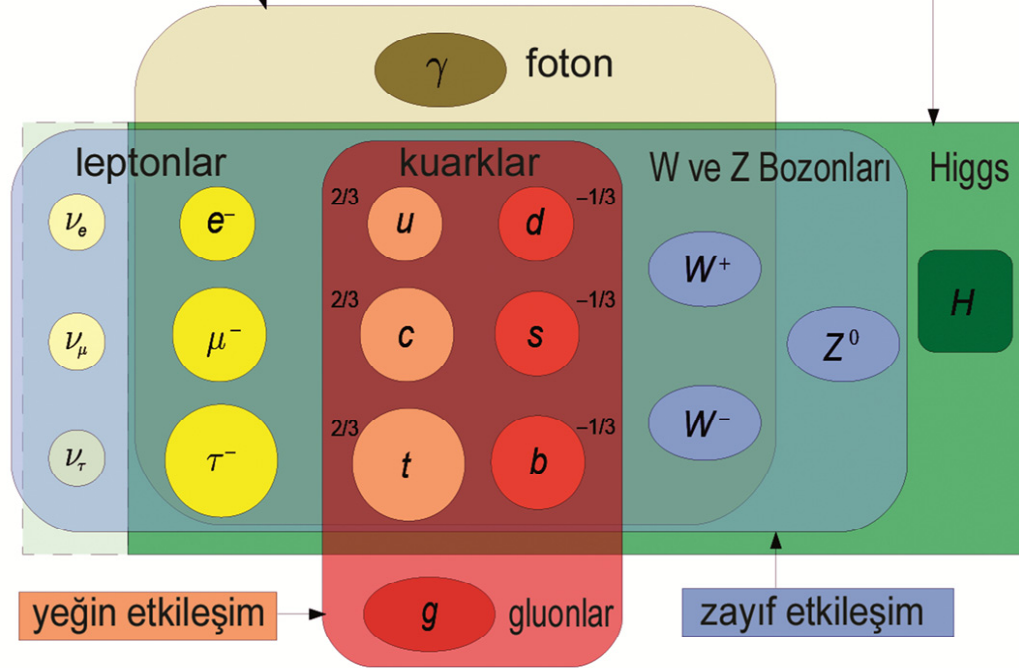


# Amaç maddenin yapıtaşlarını araştırmak



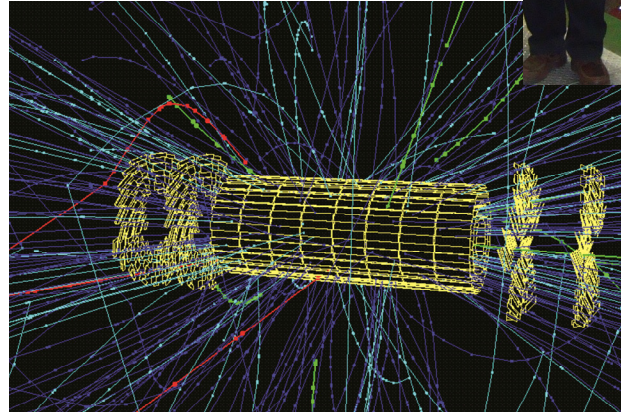
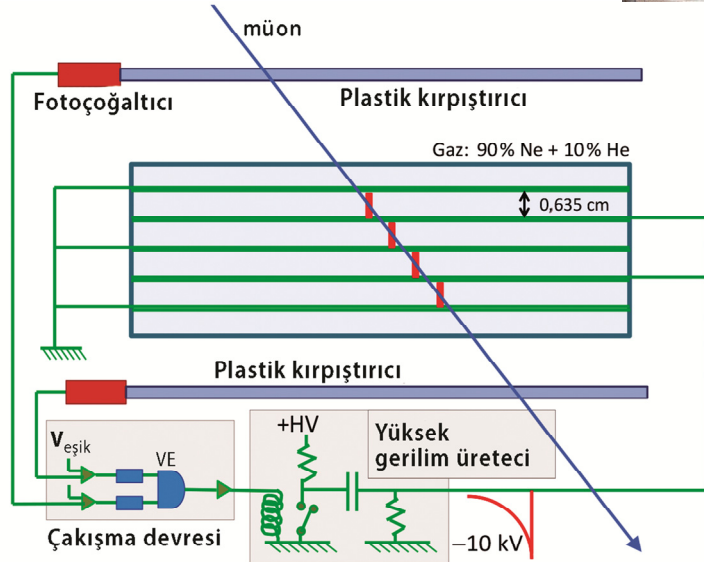
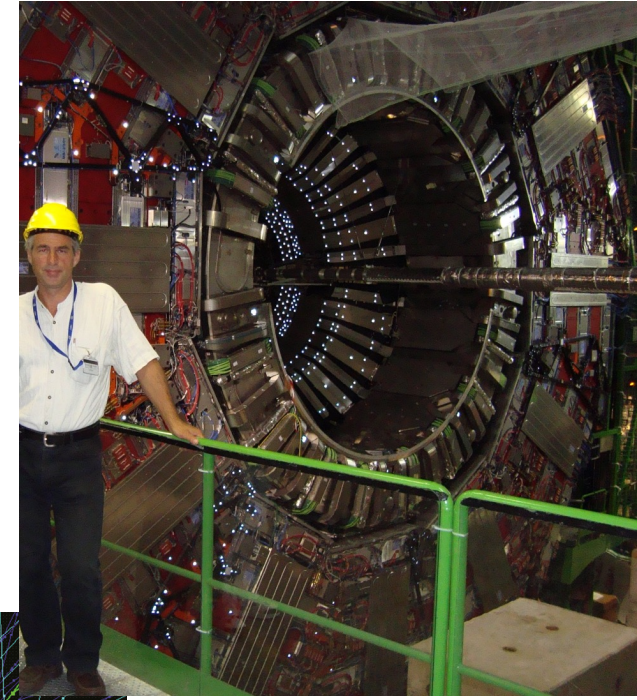
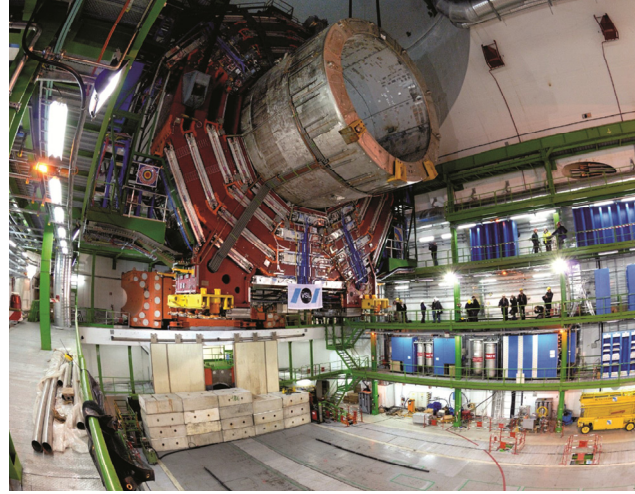
Elektromanyetik etkileşim

Higgs kupağı



Standart Modelin son parçası: Higgs parçacığı

# Milyarlarca euro harcanan on yıllarca süren bir uğraş





# Uluslararası ortaklık

## CMS ortaklığı

~ 3000 fizikçi ve mühendis  
41 ülkeden 181 üniversite ve enstitü



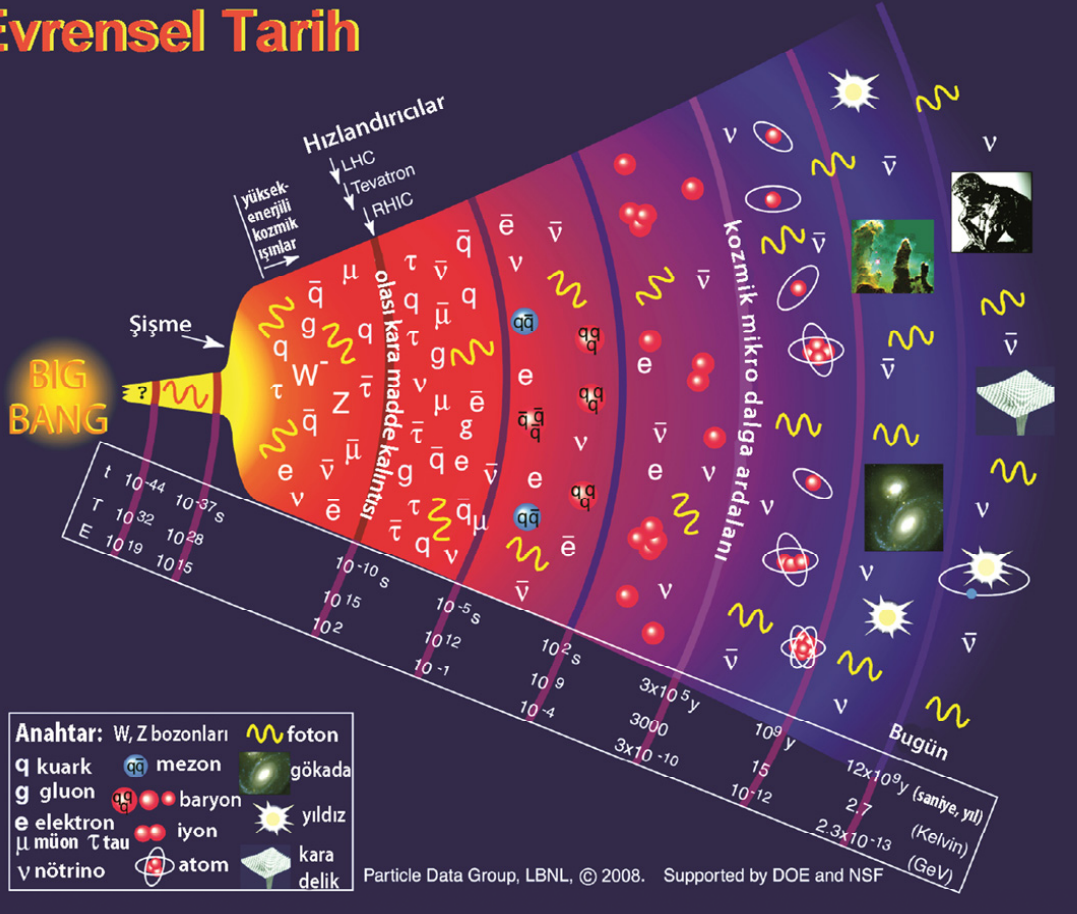




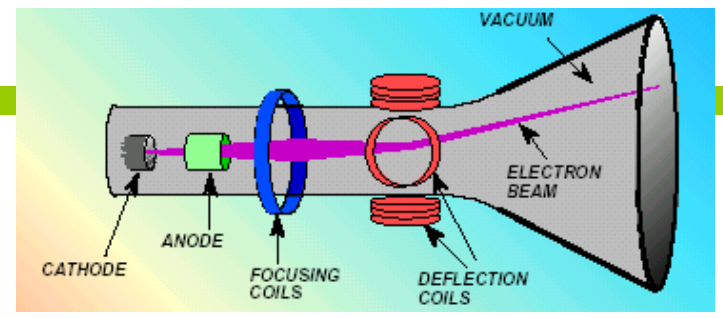


# Evrenin tarihine ışık tutmak

## Evrensel Tarih



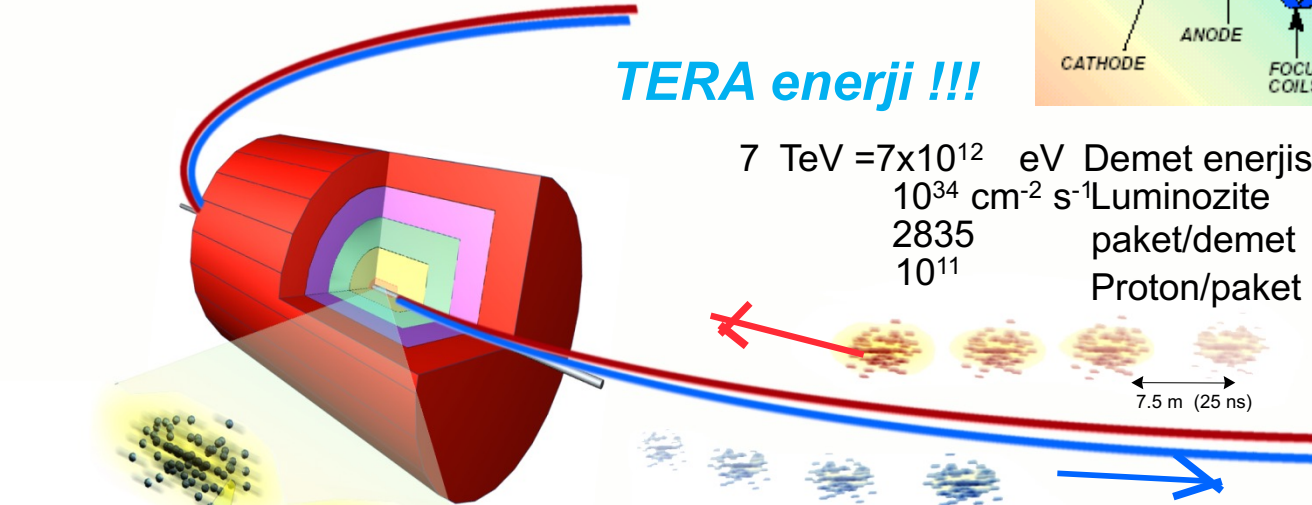
# CERN'deki Büyük Hadron Hızlandırıcısındaki (LHC) çarpışmasında evrenin ilk nanosaniyelerini görmekteyiz



**TERA enerji !!!**

7 TeV =  $7 \times 10^{12}$  eV Demet enerjisi  
 $10^{34}$  cm<sup>-2</sup> s<sup>-1</sup> Luminozite  
2835 paket/demet  
 $10^{11}$  Proton/paket

**Benzer bir sistem TV tüplerinde vardır**



**Proton**

**7 TeV**

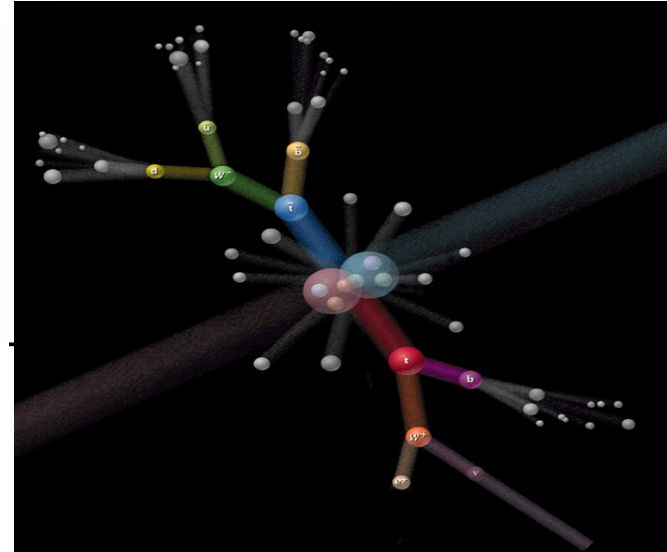
**Proton**

Çarpışan demetler  $4 \times 10^7$  Hz

Proton çarpışmaları  $10^9$  Hz

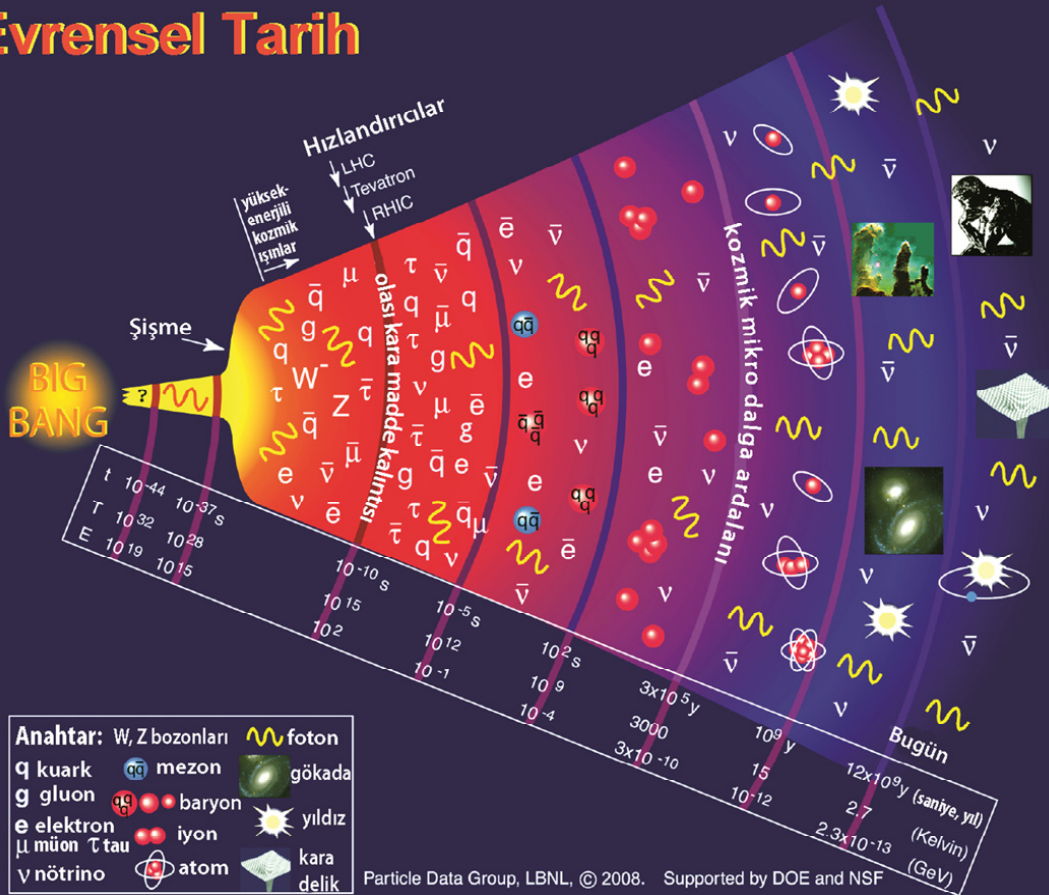
Parton çarpışmaları

Yeni parçacık üretimi  $10^5$  Hz  
(Higgs, SUSY, ....)

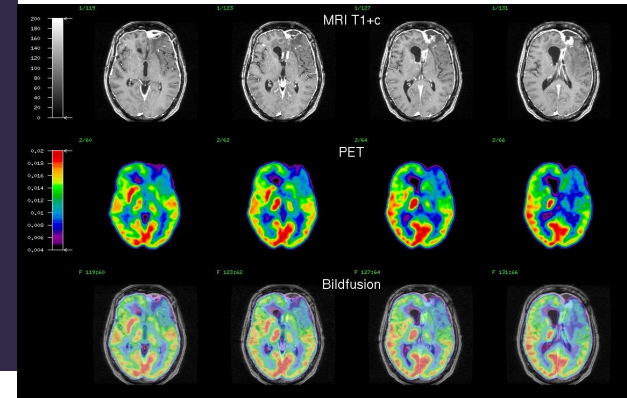


# Evrenin tarihine ışık tutmak

## Evrensel Tarih



## Yan ürünler:





# CMS deneyi

Superiletken Miknatis , 4 Tesla

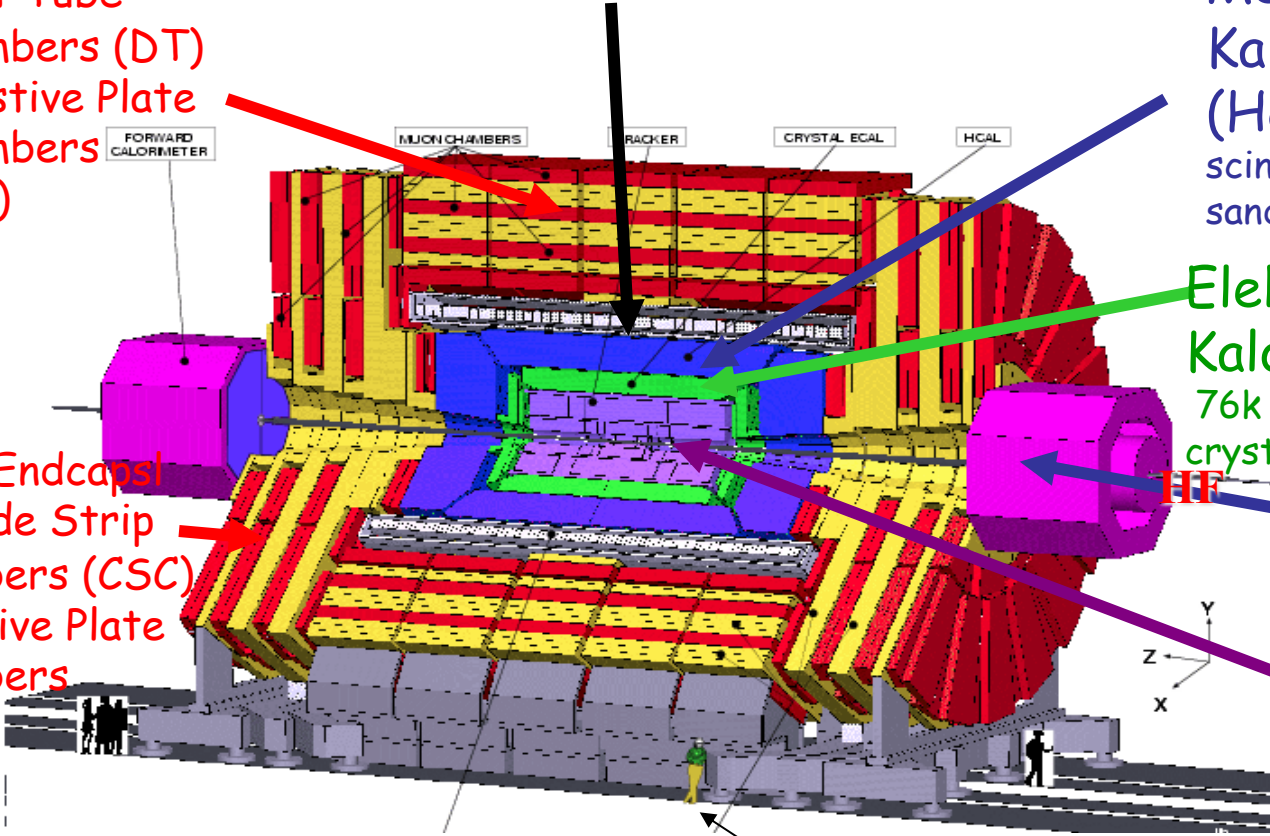
Muon Barrel  
Drift Tube  
Chambers (DT)  
Resistive Plate  
Chambers (RPC)

Merkezi Hadron  
Kalorimetresi  
(Hcal) Plastic  
scintillator/brass  
sandwich

Elektromanyetik  
Kalorimetre (Ecal)  
76k scintillating PbWO4  
crystals

Muon Endcaps  
Cathode Strip  
Chambers (CSC)  
Resistive Plate  
Chambers (RPC)

İz bulucu  
Pixels  
Silicon Microstrips  
210 m<sup>2</sup> of silicon sensors  
9.6M channels



|                |         |
|----------------|---------|
| Toplam ağırlık | 12500 t |
| Çap            | 15 m    |
| Uzunluk        | 21.6 m  |

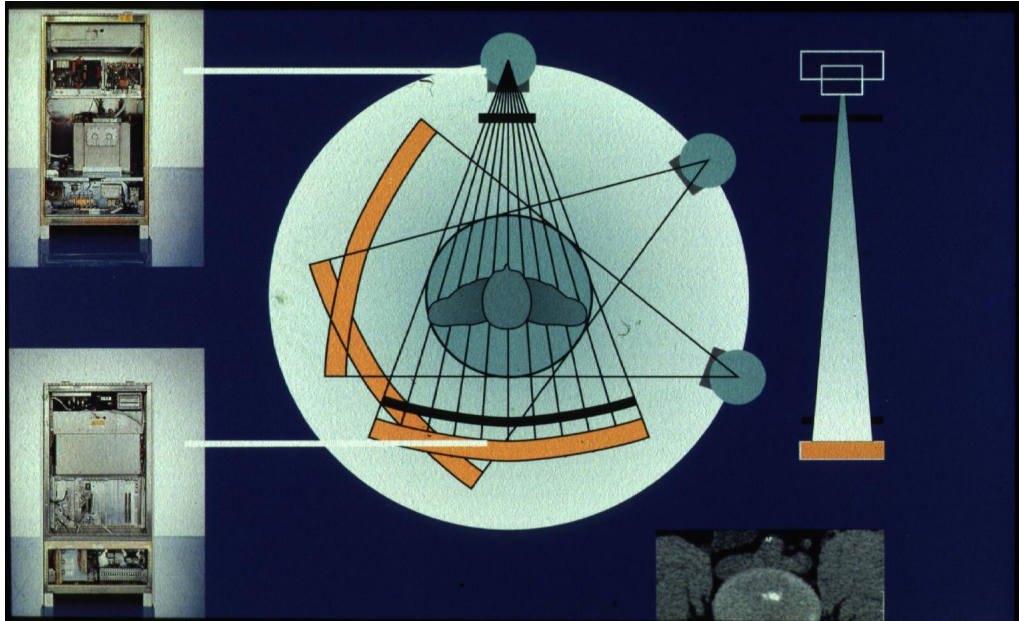
fizikçi !



## Radiology :X-rays

- conventional x-rays
- (conventional tomography)
- x-ray angiography
- digital subtraction angiography
- (x-ray) computed tomography

interventional radiology (fluoroscopically guided instruments)



CT: cross sectional images & computers



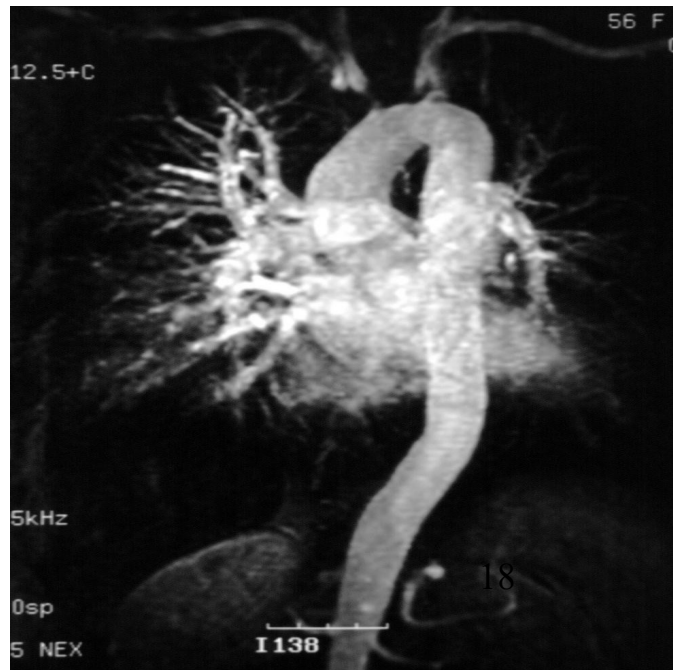
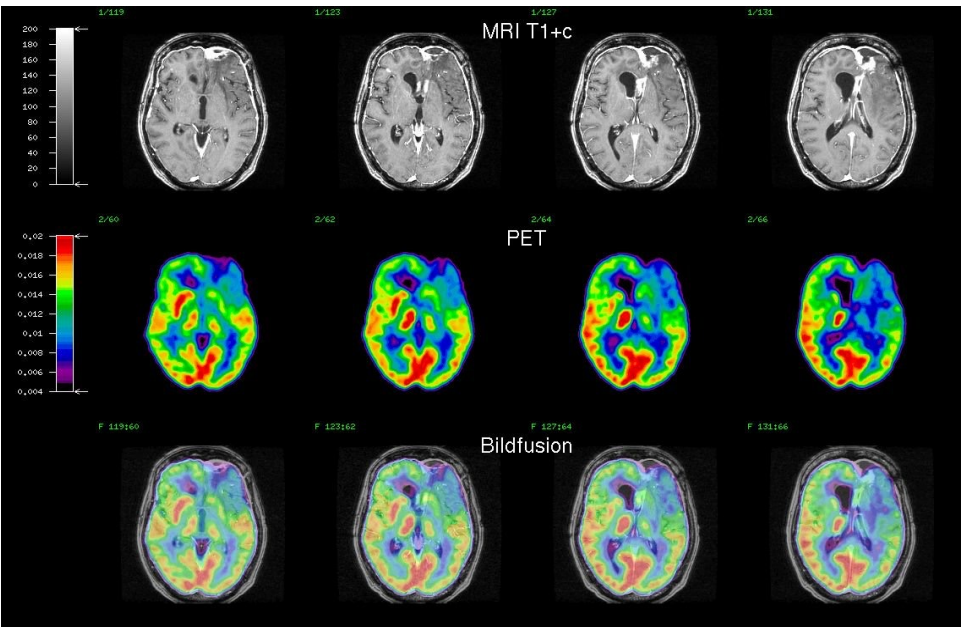
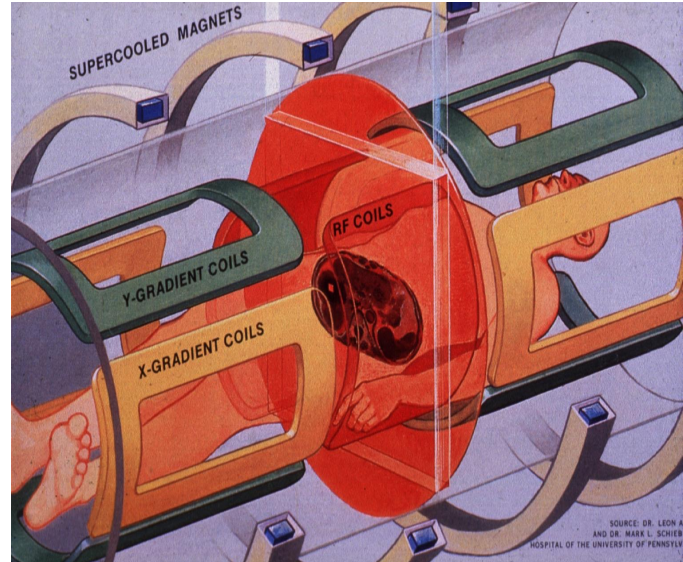
# Magnetic Resonance : radio waves

## MR imaging

- static MR
- dynamic contrast enhanced MR (Perfusion)
- MR angiography (contrast enhanced, TOF, PC)
- MR flow imaging
- MR diffusion imaging

## MR spectroscopy with P-31, H-1, C-13

## PET



# ve belki de CERN'deki en önemli buluş

*Les Horribles Cernettes*

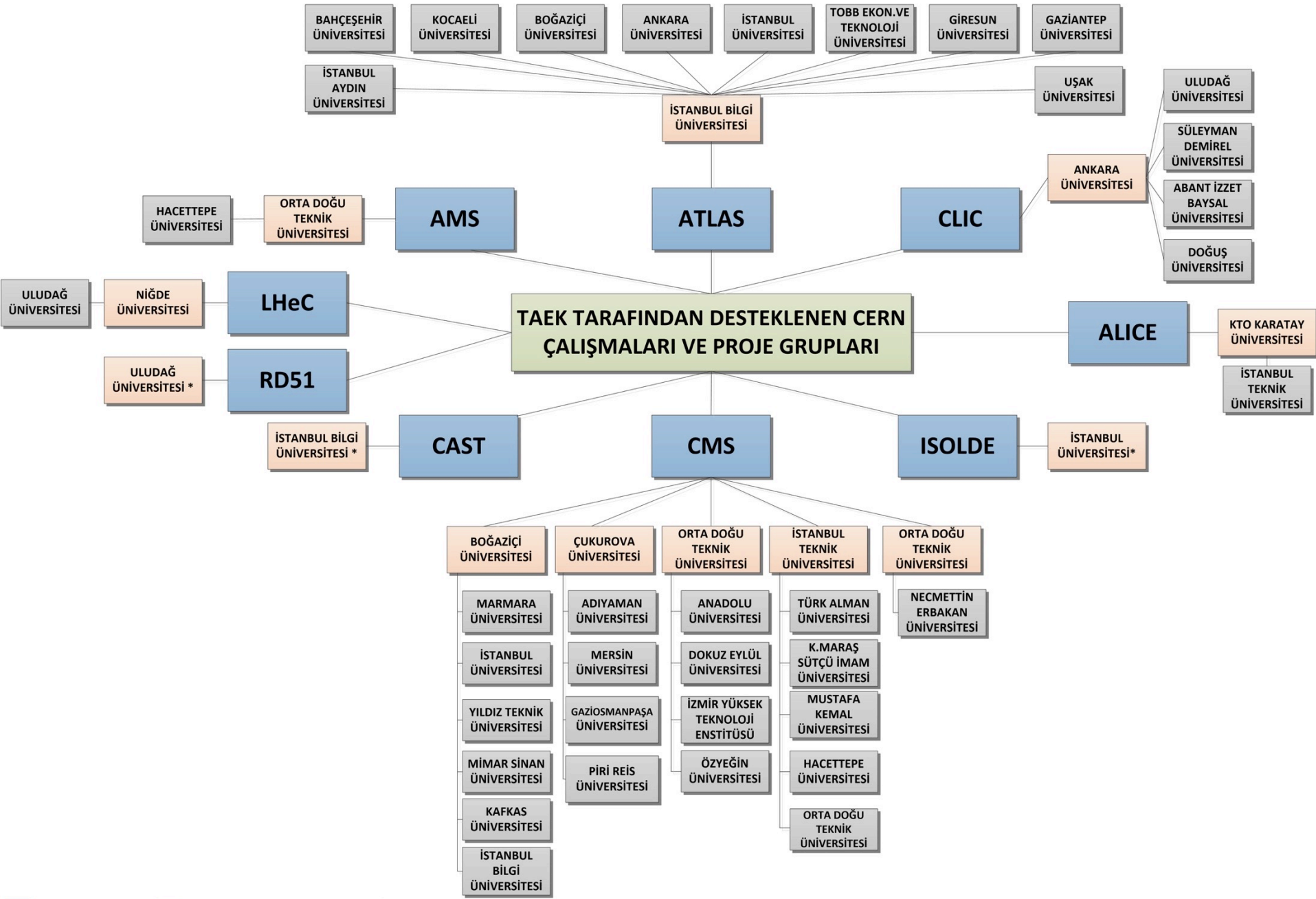


Sir Tim Berners-Lee invented the World Wide Web in 1989.

Image: © CERN



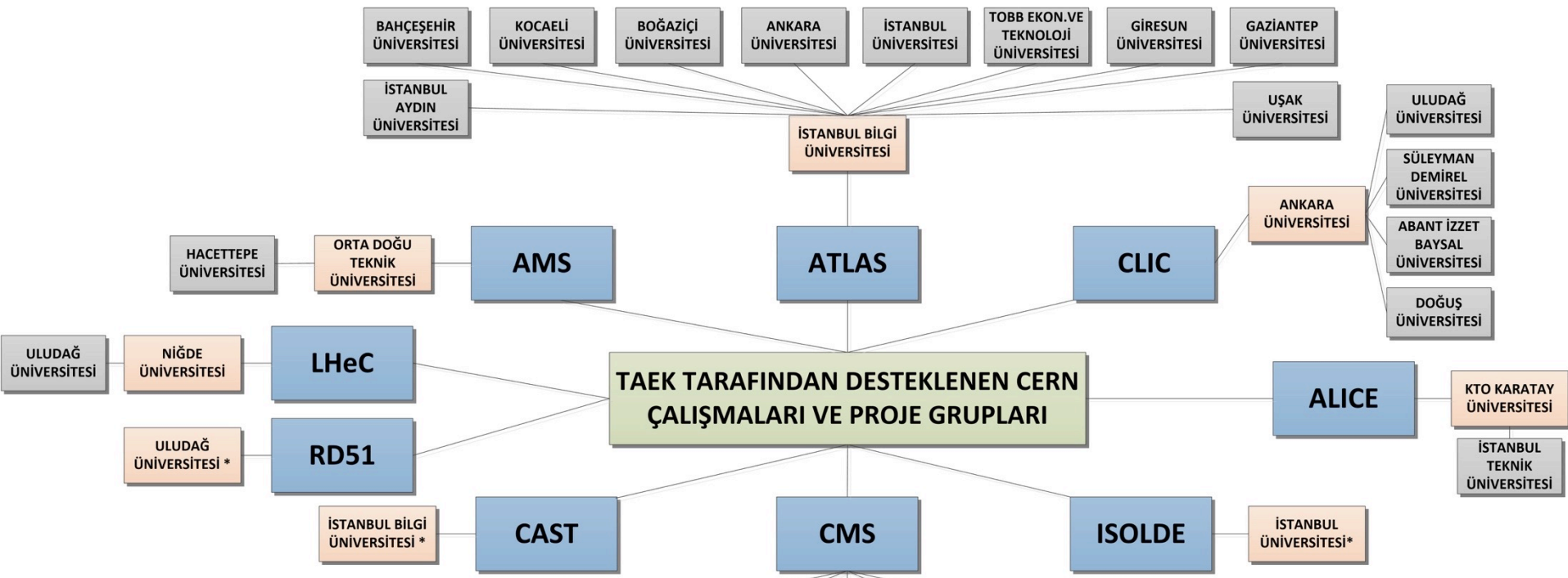
Tim Berners-Lee' nin ilk World Wide Web browser' ı  
(CERN, 1990)



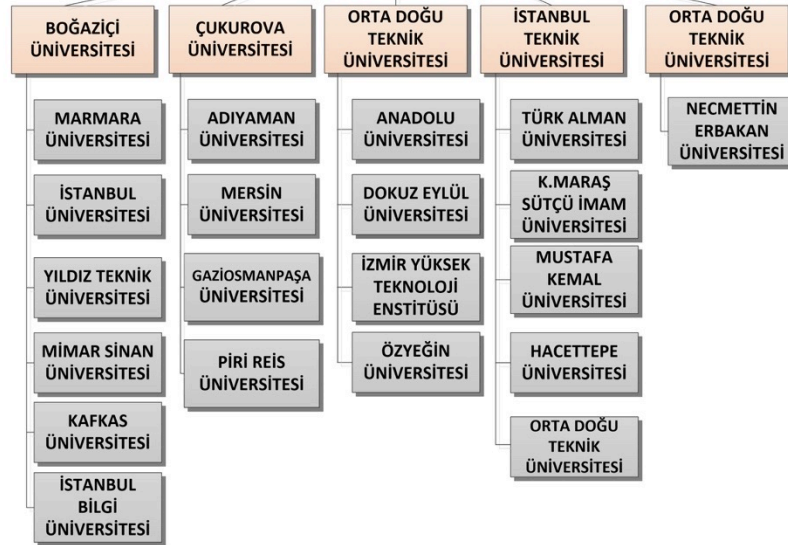
■ CERN Çalışmaları ■ Proje Yürütücüsü Üniversiteler ■ Projede Elemanı Bulunan Üniversiteler

\* İlgili CERN Çalışması kapsamında desteklenen son proje olup halihazırda devam eden proje bulunmamaktadır.





Bütün bu deneylere ayrılan bütçe Almanya'nın binde birinden az !!!



■ CERN Çalışmaları ■ Proje Yürütücüsü Üniversiteler ■ Projede Elemanı Bulunan Üniversiteler

\* İlgili CERN Çalışması kapsamında desteklenen son proje olup halihazırda devam eden proje bulunmamaktadır.

# Büyük deneylerde Türkiye'nin katkısının az olma nedenleri

➔ Türkiye'de hedeflenen teknoloji geliştirmek



**Fizikçi yetiştirmeden Kuantum bilgisayarı yapma çabası!**





Hadi bir teknoloji geliřtirelim



# Tarihten ders çıkarmak: Alternatif akım



Alternatif akımı kim keşfetti?



Tümü

Haberler

Görseller

Videolar

Alışveriş

Daha fazla

Ayarlar

Araçlar

Alternatif akım > Mucitler

Nikola Tesla



Ottó Bláthy



Yazımı düzeltilmiş şu sorgu için sonuçları görüyorsunuz: **Alternatif akımı kim keşfetti?**

Yine de şu sorguyu ara: [Alternatif akımı kim keşfetti?](#)

[alternatif akımı kim icat etti | Neolacakki](#)

<https://www.neolacakki.com/tag/alternatif%20akımı%20kim%20icat%20etti> ▼

**Nikola Tesla**'yı Ölümsüz Kılan 7 İcat. Bu üstün zekânın bilime kazandırdığı 700 icadı tek tek yazmak çok uzun bir liste gerektire... ezgiibili. 1 yıl önce. 0. 1,200 ...

[AC/DC SAVAŞLARI: NİKOLA TESLA, THOMAS EDİSON'A ... - Açık Bilim](#)

[www.acikbilim.com/2013/03/.../acdc-savaslari-nikola-tesla-thomas-edisona-karsi.html](http://www.acikbilim.com/2013/03/.../acdc-savaslari-nikola-tesla-thomas-edisona-karsi.html) ▼

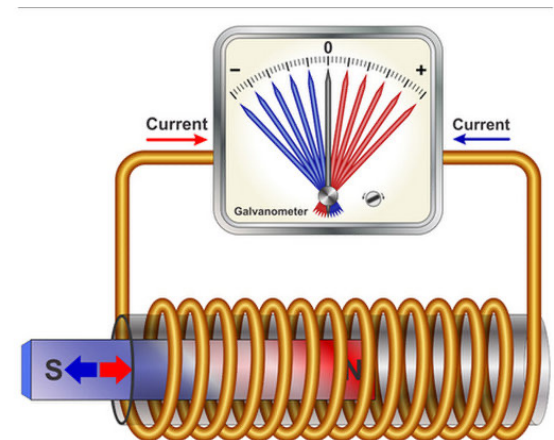
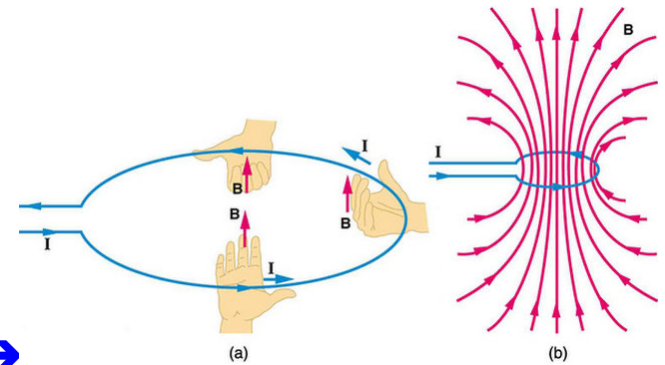
4 Mar 2013 - Command & Conquer oyunundaki Tesla coil silahlarını kim unutabilir ki? ... Çoğu kaynakta, Tesla'dan alternatif akımın (Alternating Current:AC) ...

[Tesla](#)

[muratyildirimoğlu.com/makaleler/abartilindahitesla.htm](http://muratyildirimoğlu.com/makaleler/abartilindahitesla.htm) ▼

# Alternatif akımı Tesla icat etmedi

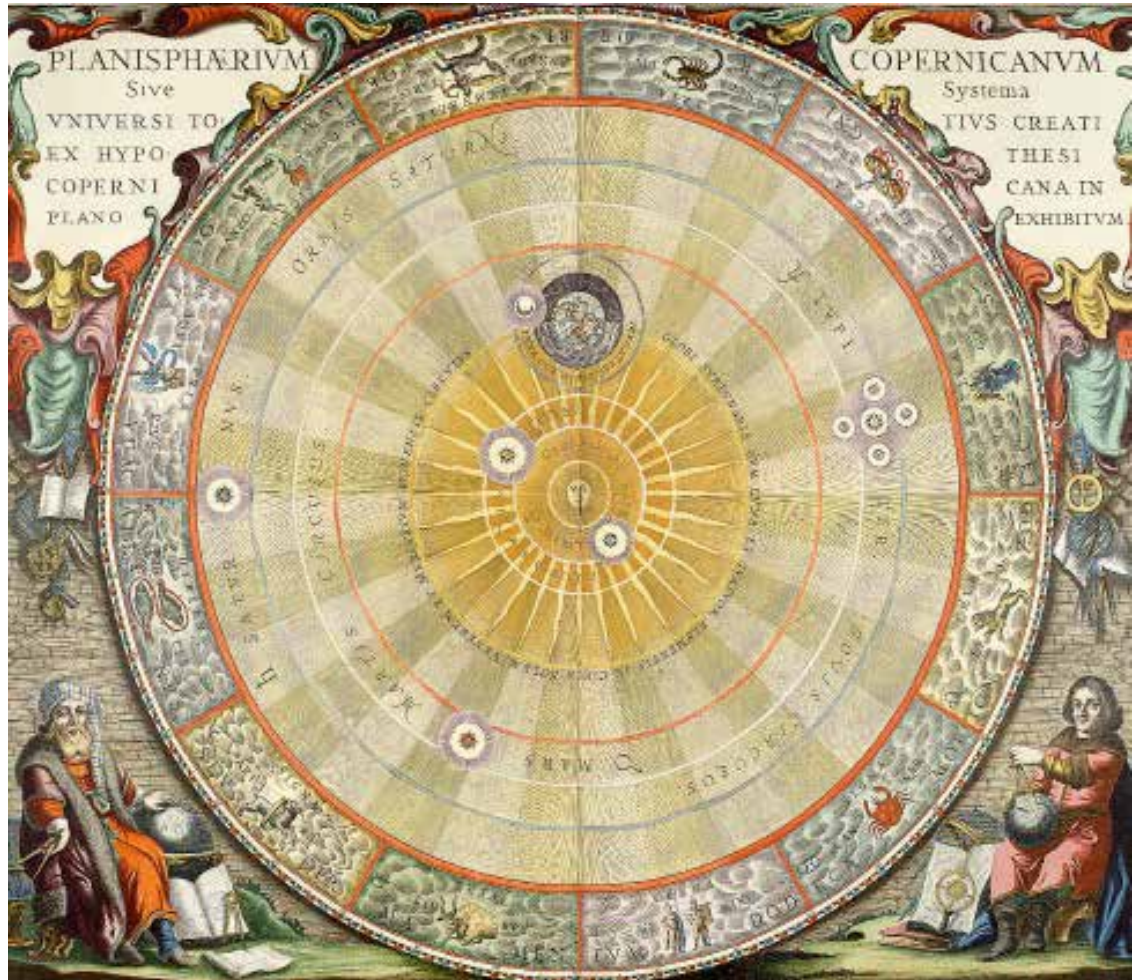
- Ampère yasası (1825): hareket eden elektrik yükü manyetik alan yaratır
- Michael Faraday (1830'lar): değişen manyetik alanlar değişen elektrik alanı yaratır
- James Clerk Maxwell (1865): Elektrik ve manyetik kuvvetler elektromanyetik kuvvetin bileşenleridir.  $\leftrightarrow$  ışık
- Heinrich Rudolf Hertz (1886): elektrik kapasitörün ilk hali (Leyden kavanozu)  $\rightarrow$  elektromanyetik dalgaların keşfi
- Pavel Yablochkov (1876): alternatif akımla çalışan ilk lamba
- Nikola Tesla (1888): alternatif akım motoru patenti





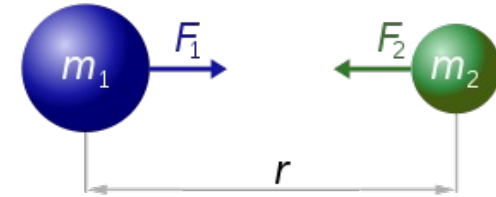
# Kopernik'ten Elektrona I

➔ Kopernik **Devrimi**  
(**De revolutionibus**  
orbium coelestium)



# Kopernik'ten Elektronu II

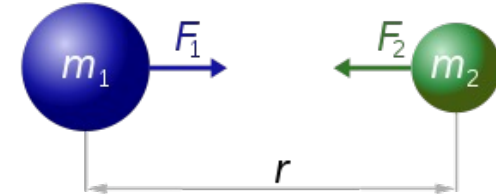
- Newton (1680'ler) *Yeryüzü yasaları ile gökyüzü yasalarının birleşmesi, Kütleçekim yasası*



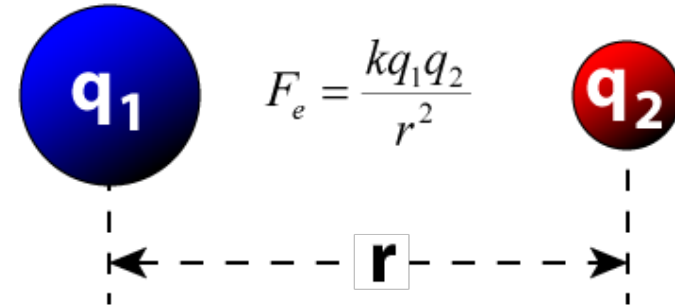
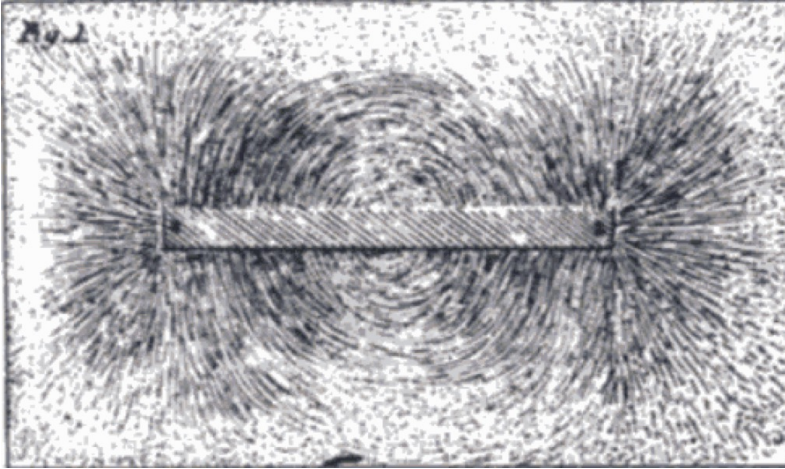
$$F_1 = F_2 = G \frac{m_1 \times m_2}{r^2}$$

# Kopernik'ten Elektronla II

- Newton (1680'ler) *Yeryüzü yasaları ile gökyüzü yasalarının birleşmesi, Kütleçekim yasası*
- Coulomb (1785) *elektrik kuvveti*
- Faraday (1830) *elektrik ve manyetik alanlar*



$$F_1 = F_2 = G \frac{m_1 \times m_2}{r^2}$$

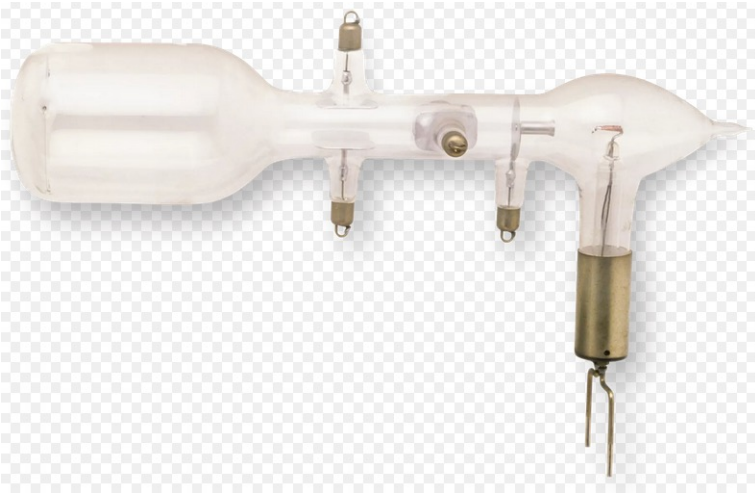


- Kuantum alan kuramları 1930'lar



# Kopernik'ten Elektrona III

- Kopernik 1543
- Galileo 1600'ler
- Newton 1680'ler
- Coulomb, Faraday, Maxwell
- Thompson (1897): **elektronun keşfi**



tüplü televizyon