



UNIVERSITÀ
DI TRENTO

Dipartimento di
Fisica

Elementi
di
Fisica Moderna

2025

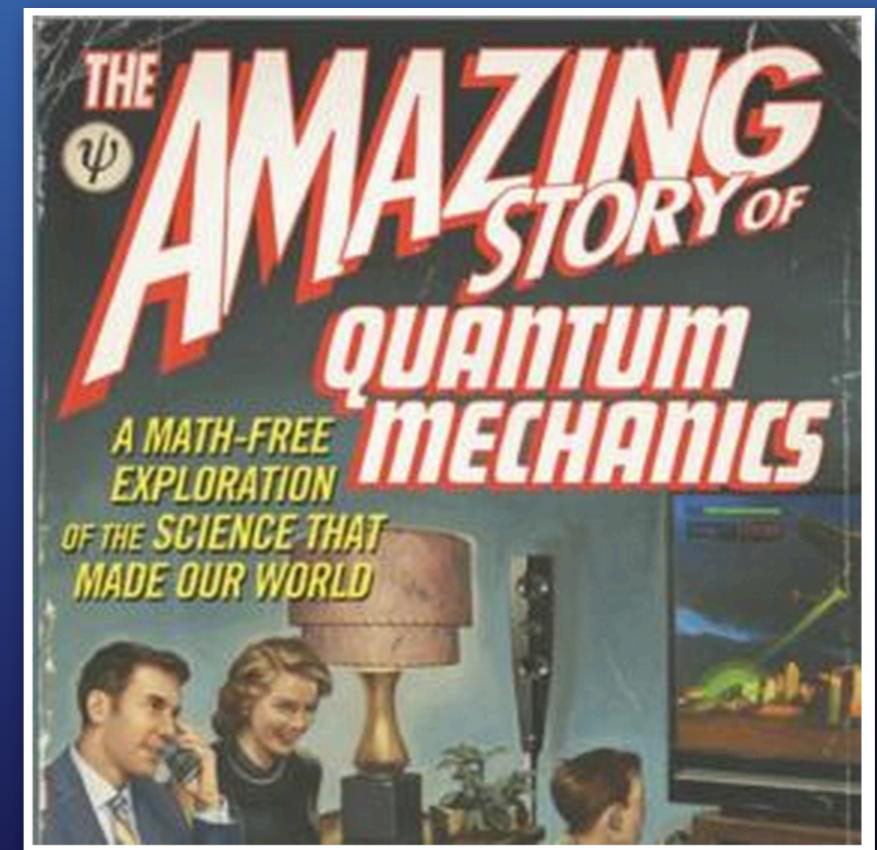
[& intelligenza artificiale]

UN corso di fisica «moderna»:

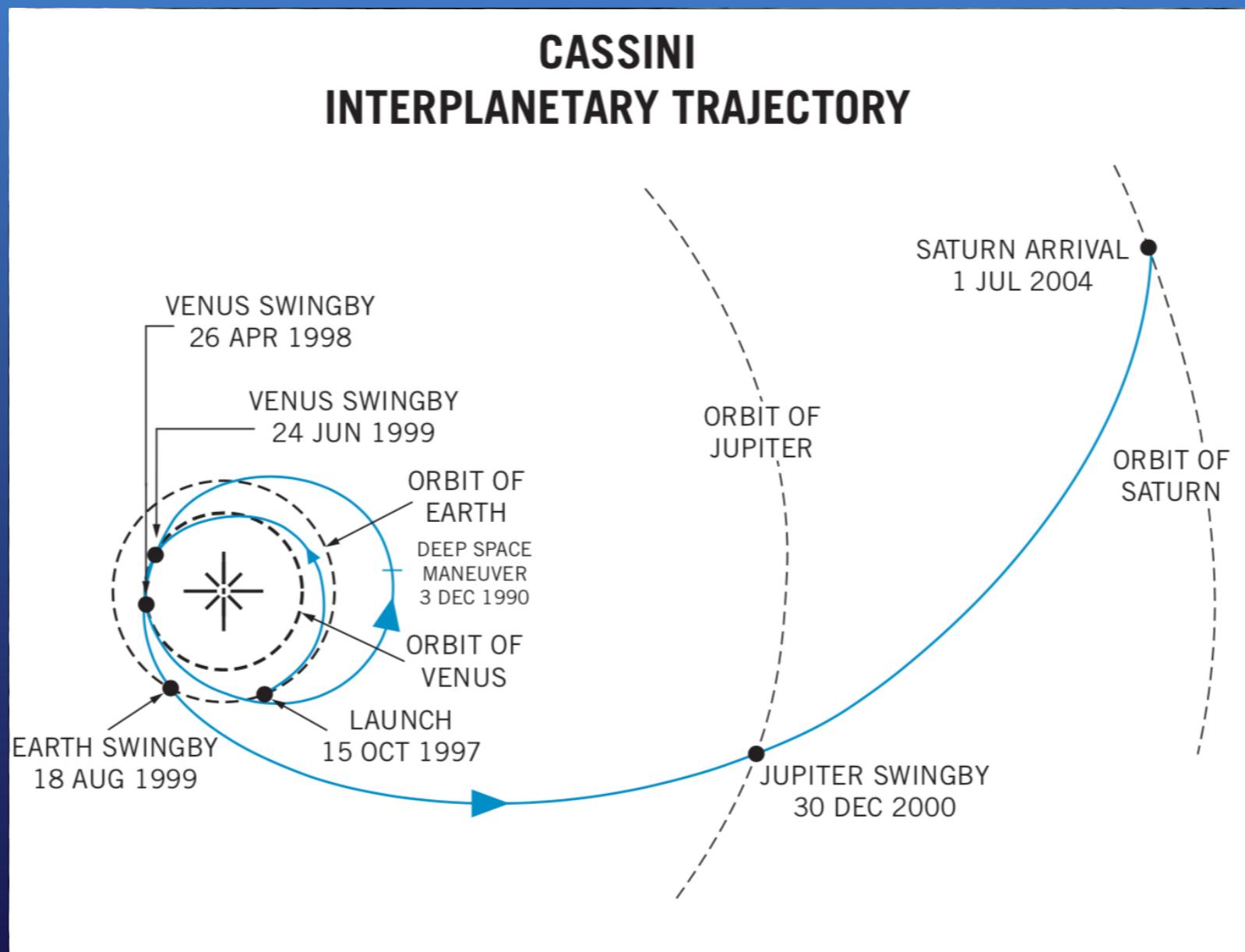
un mondo quantistico & relativistico !

■ Non solo
Conoscenza

■ Non solo Tecnologia



Successi (indiscutibili) della fisica classica



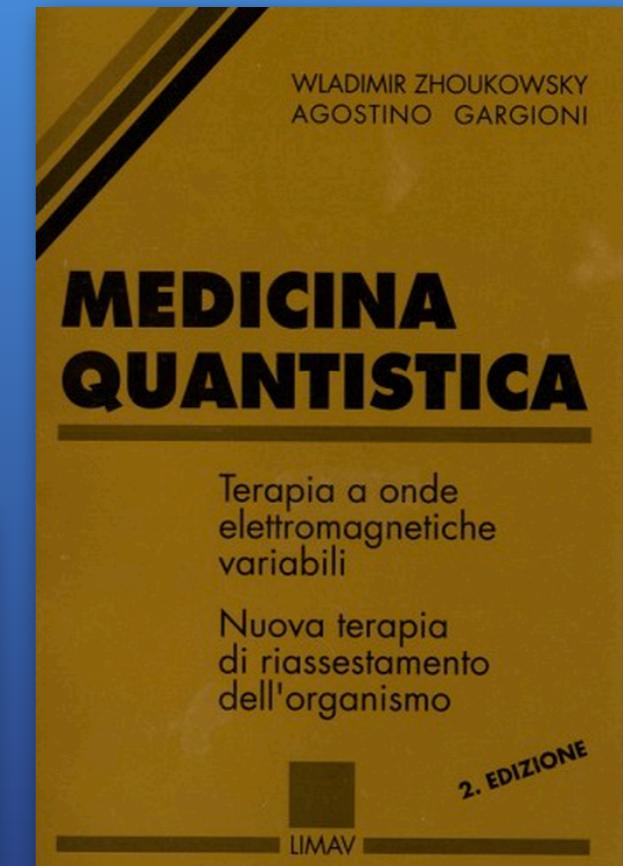
di cosa parlate

- Industria
- Spettroscopia
- Medicina
- Microscopia
- Informatica
- Elettronica
- Navigazione



Filosofia della Scienza

di cosa Non parlare (bene)



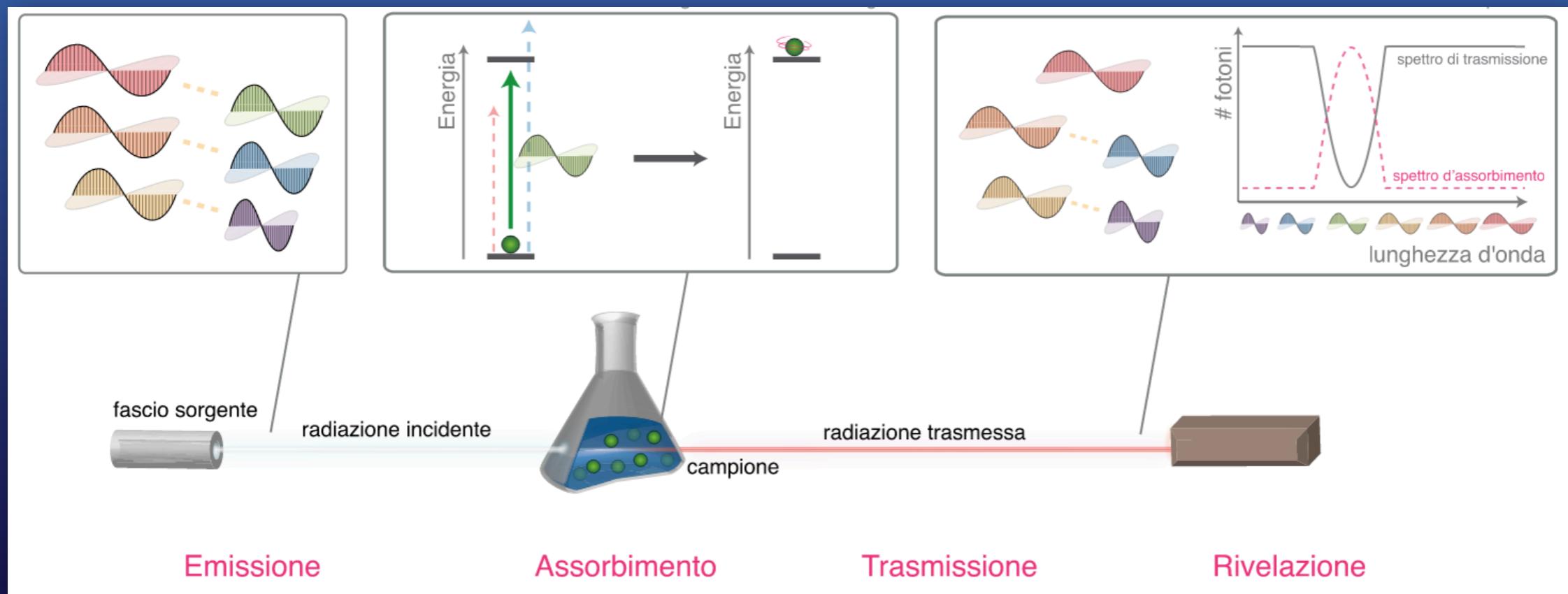
INDUSTRIA

Light
Amplification
by
Stimulated
Emission
of Radiation



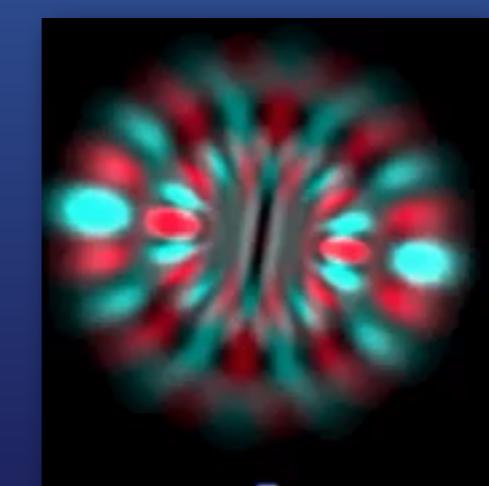
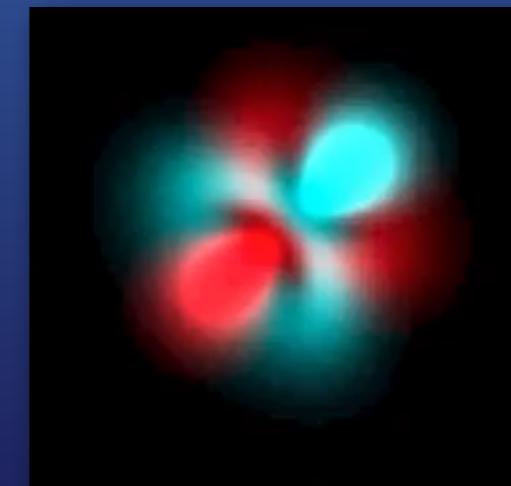
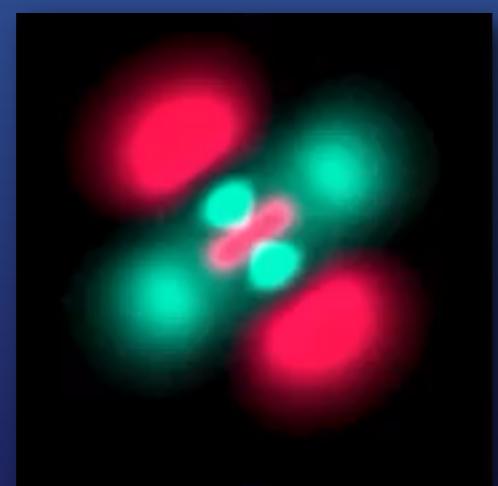
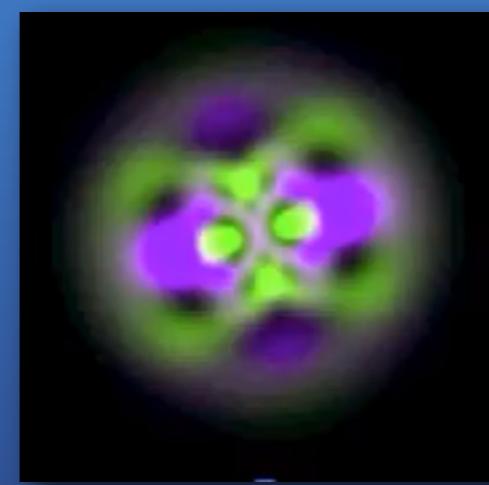
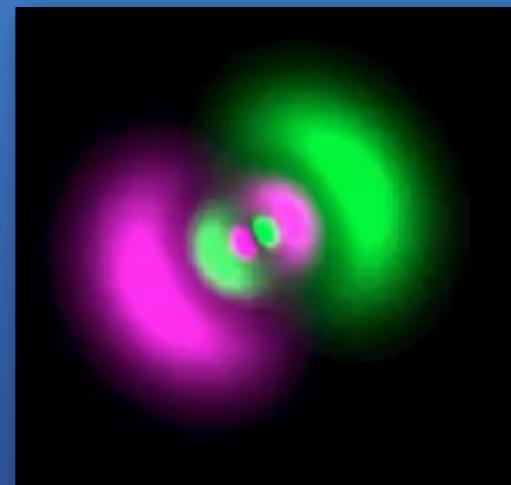
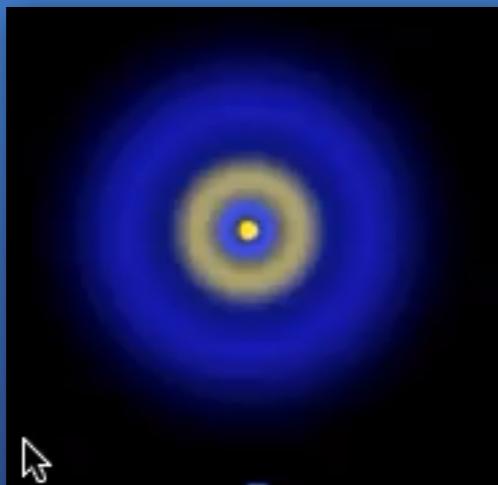
Spettrosopia

Atomica
Molecolare
Nucleare
Subnucleare



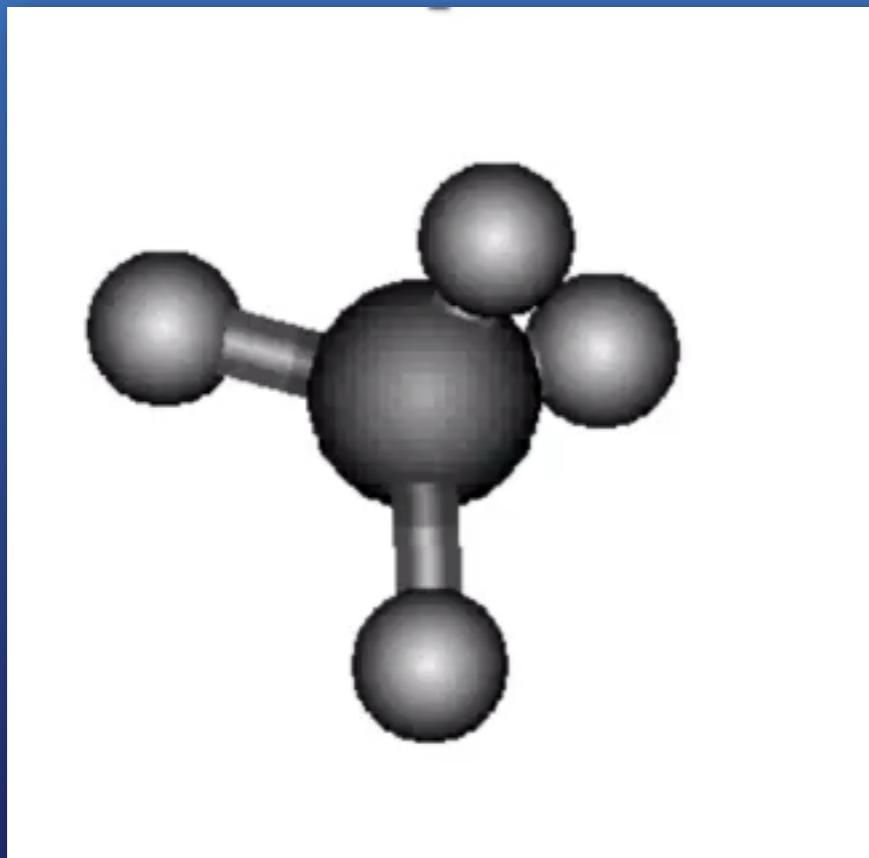
Spettroscopia

Atomica



Spettroscopia

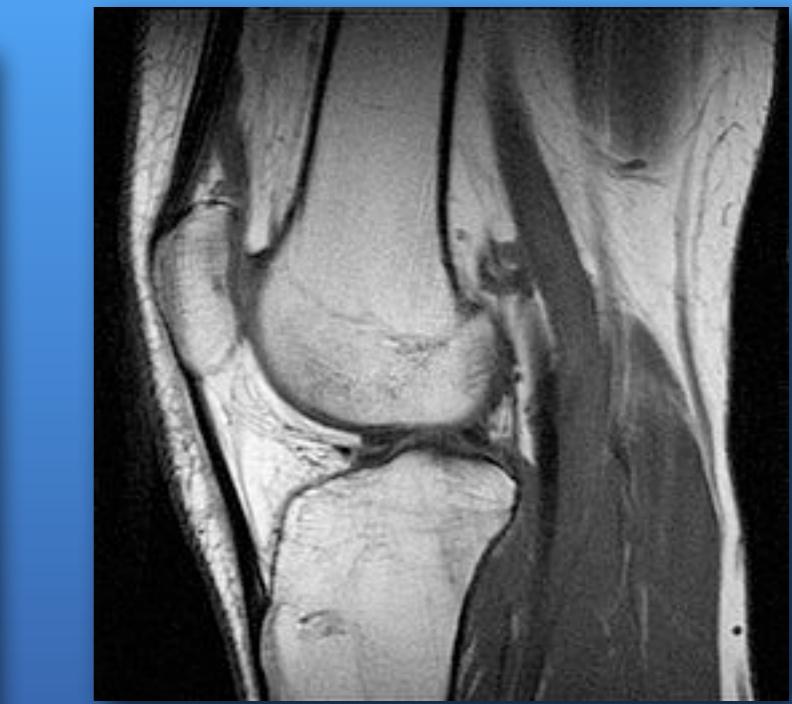
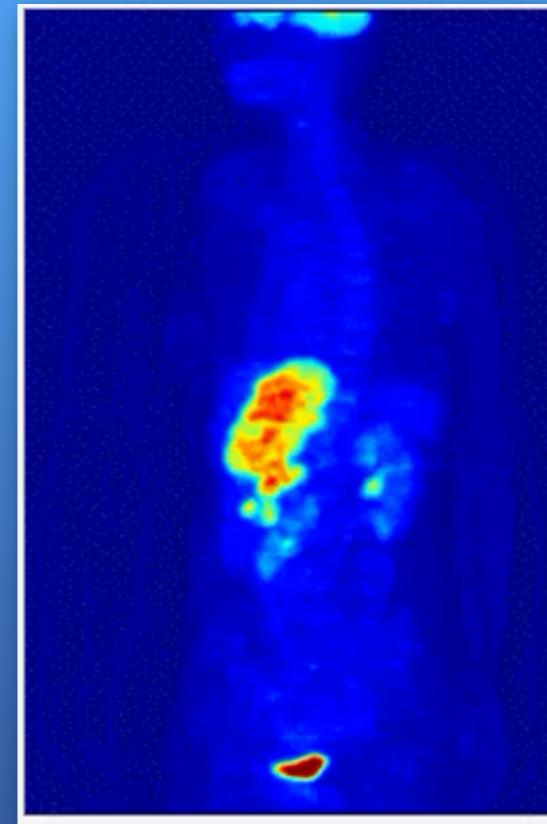
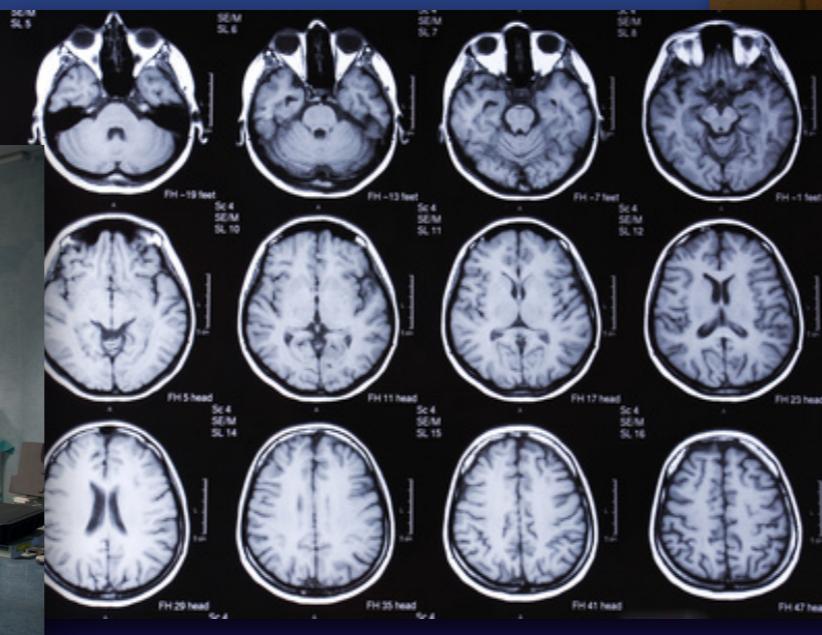
Molecolare (rotazioni)



MÉDICINA

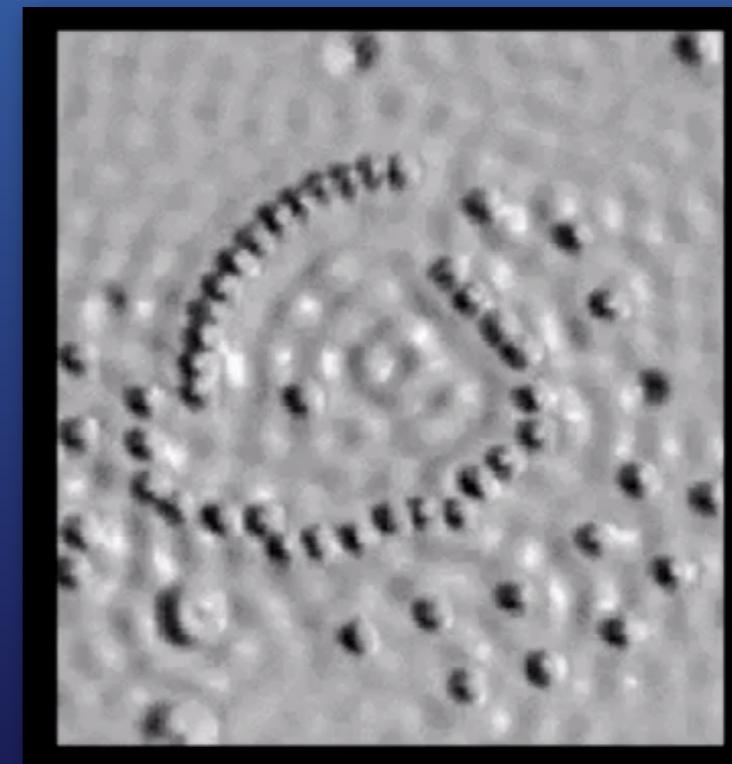
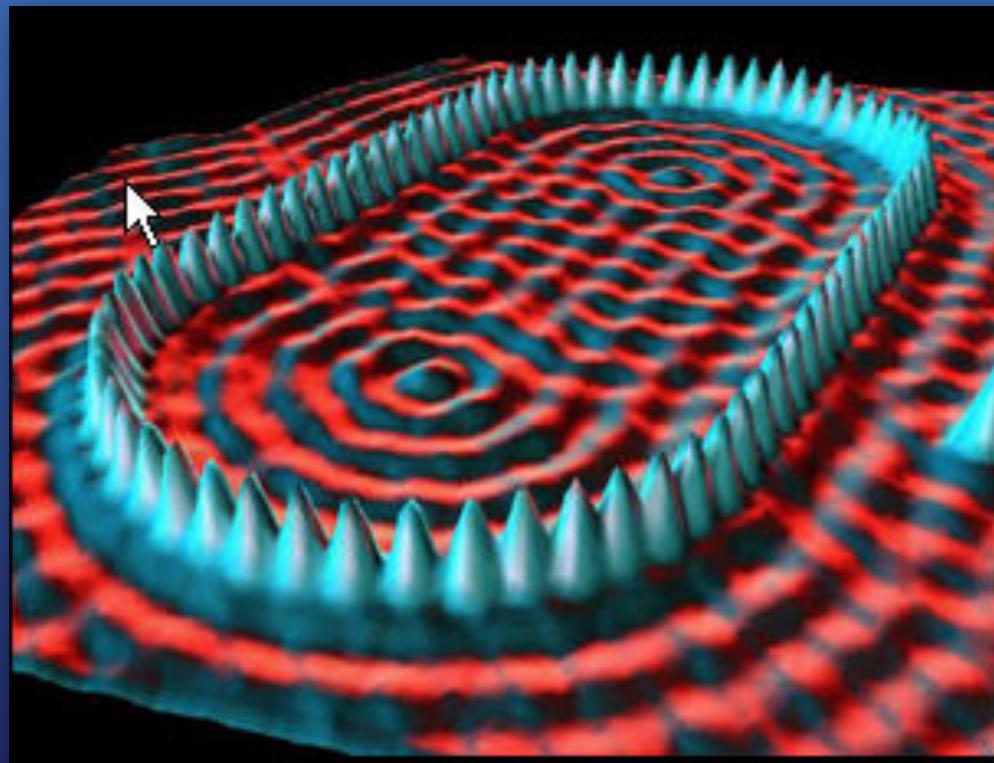
Diagnóstica e Terapie

Laser
NMR e IRM
PET
Raggi X e TAC



SUPER MICROSCOPIA

Effetto tunnel



ELETTRONICA

Transistor

Semiconduttori

giunzione PN

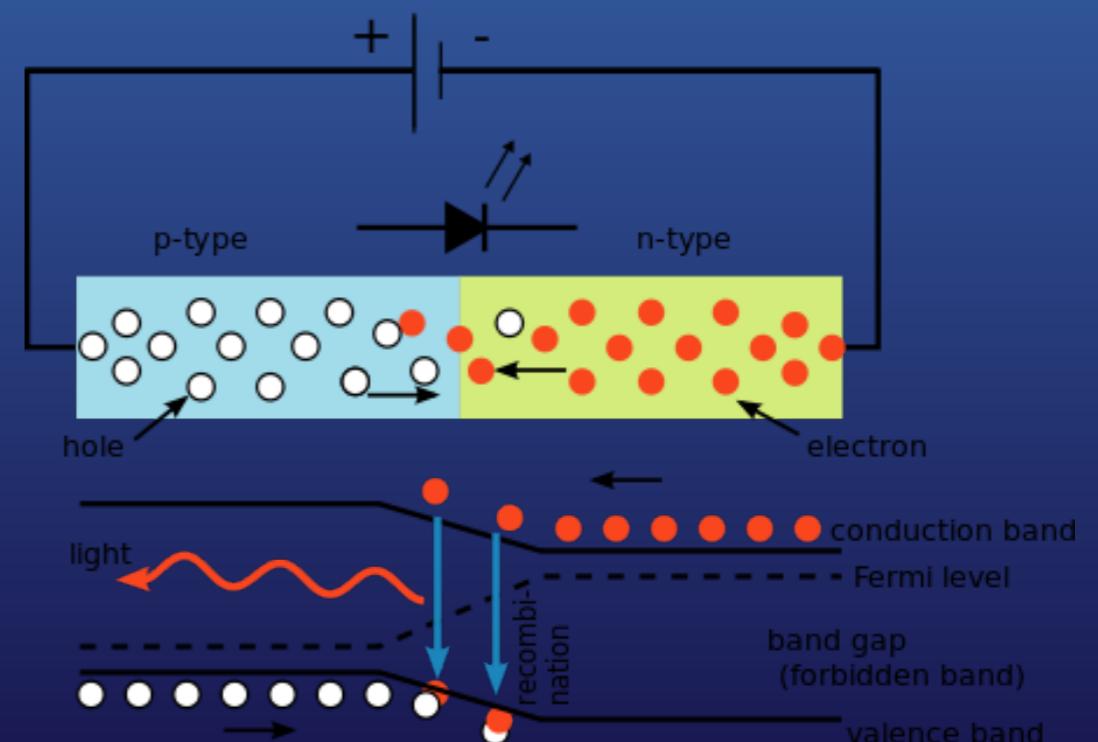
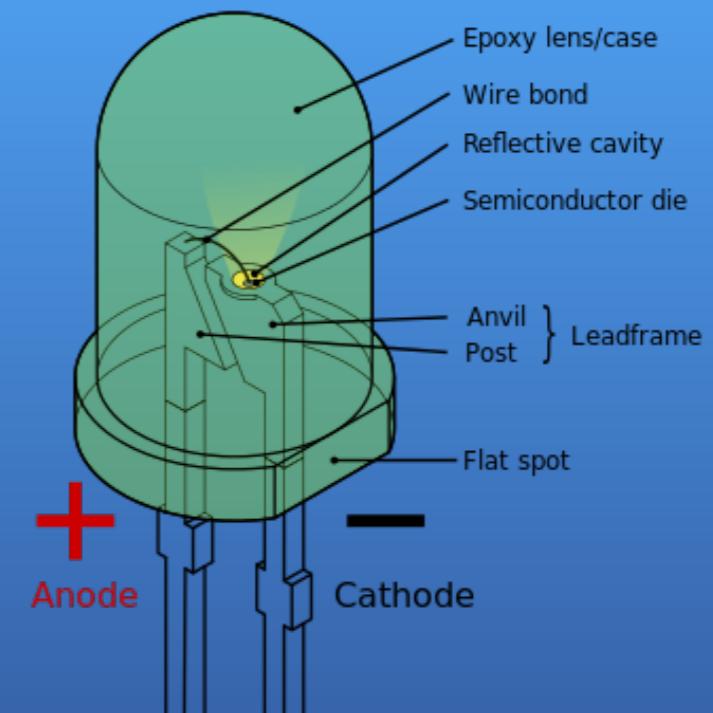
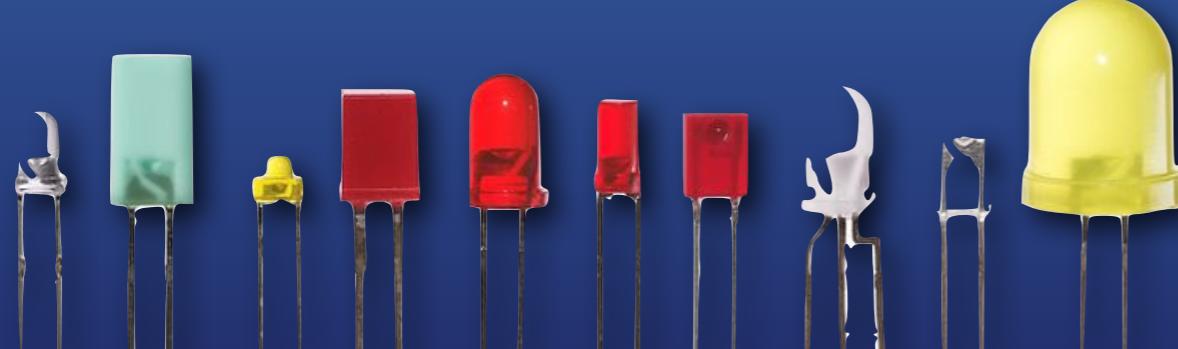
Integrazione a scala elevatissima



ELETTRONICA

Diodi LED

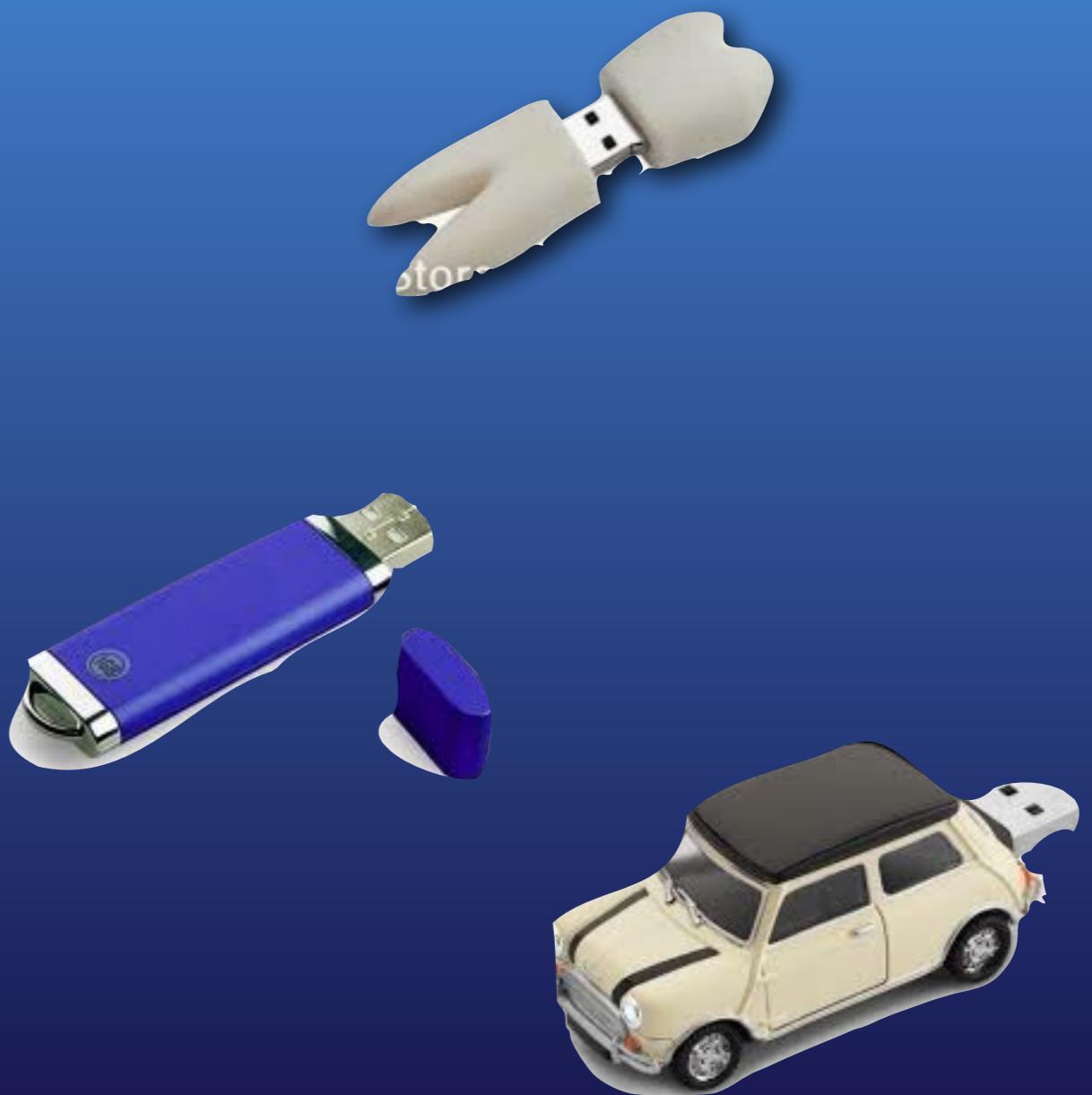
Semiconduttori giunzione PN



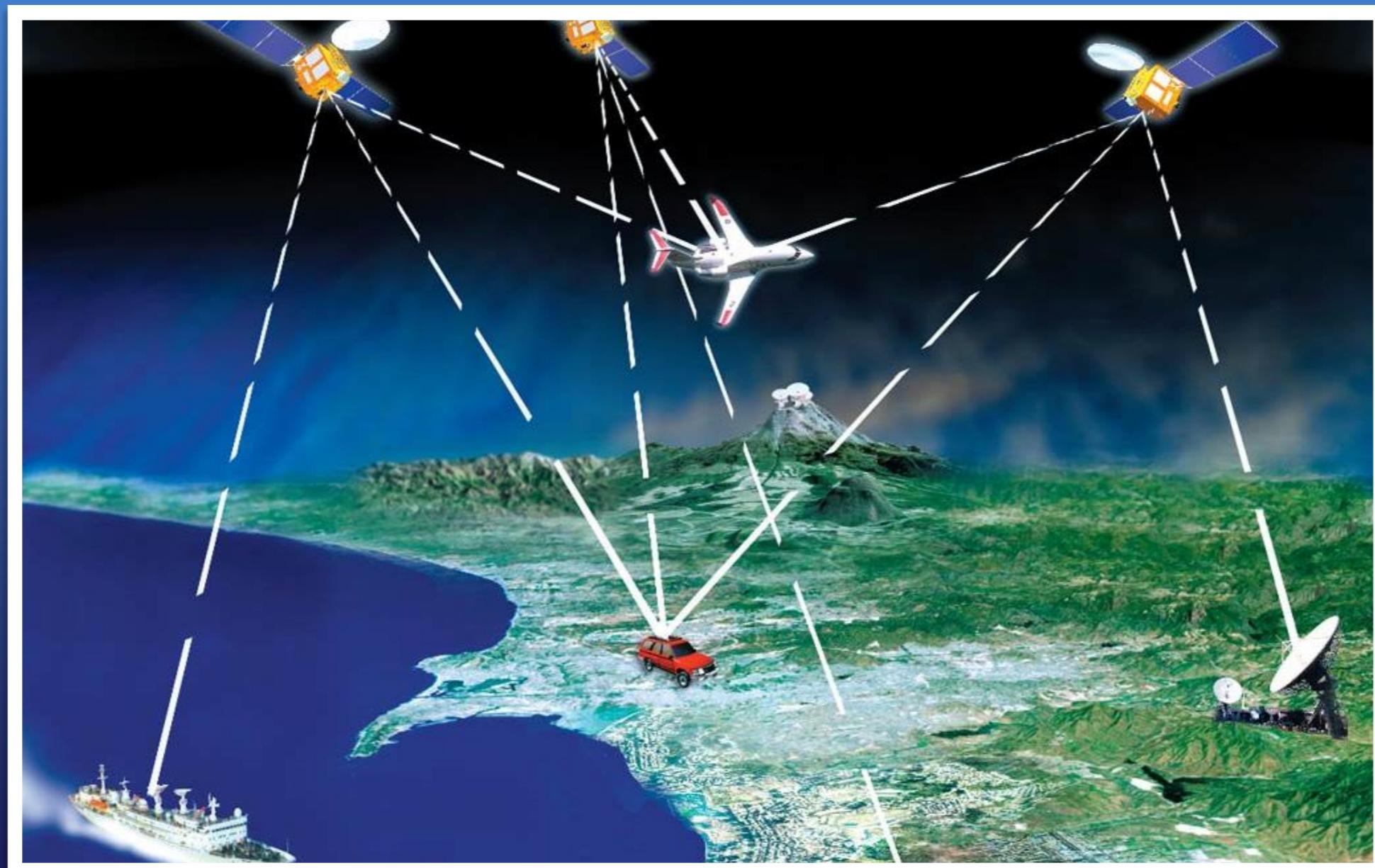
ELETTRONICA

Memorie Flash

Semiconduttori
giunzione PN

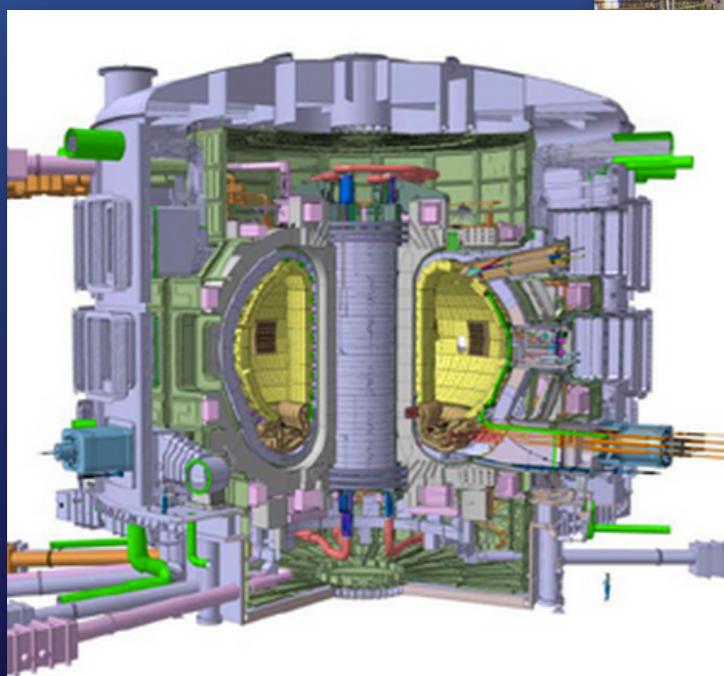


Le costellazioni GPS



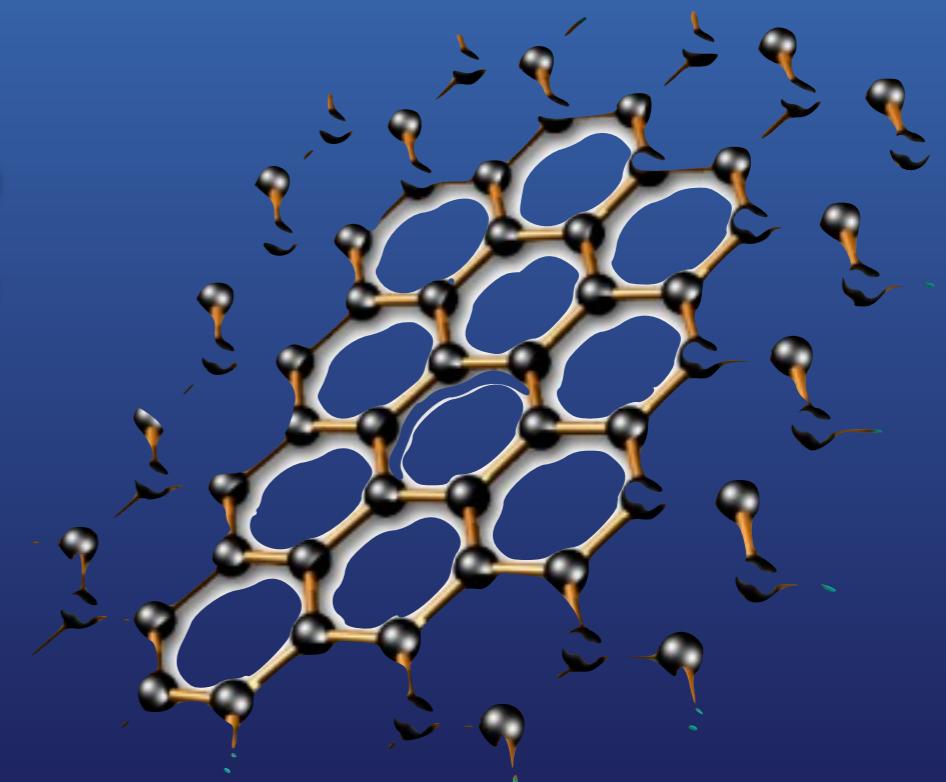
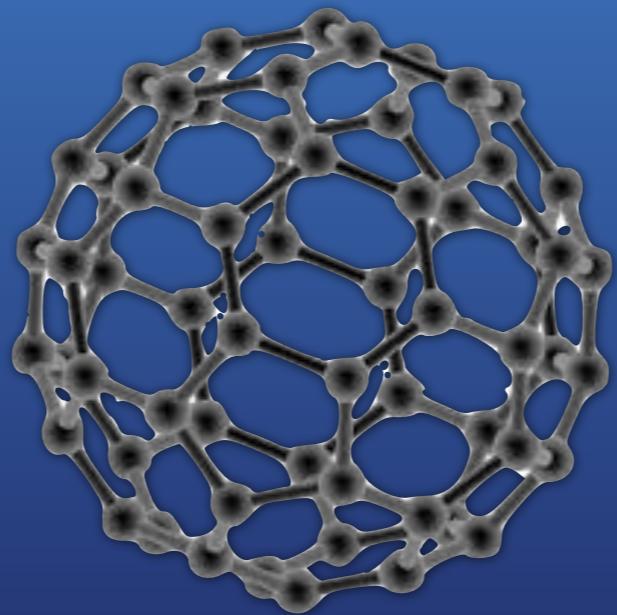
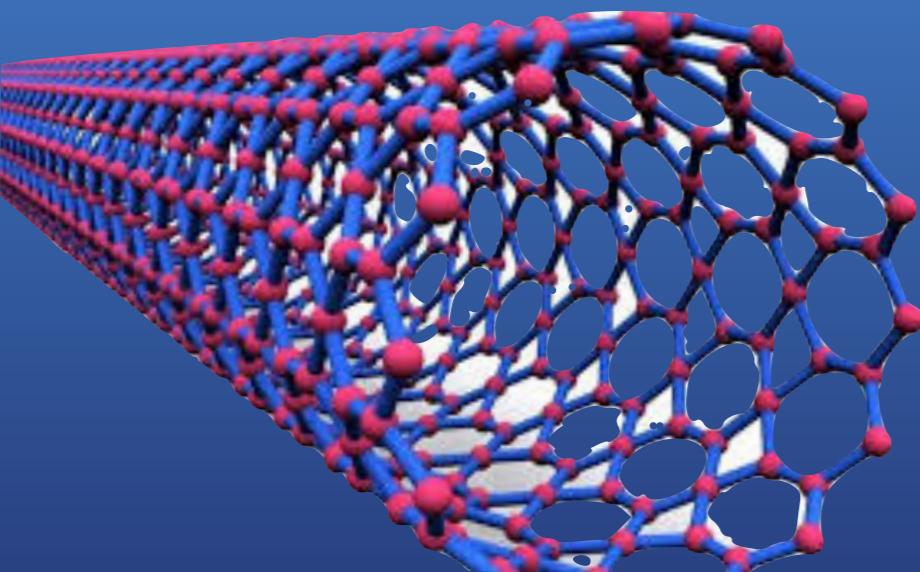
ENERGIA

Fotovoltaico
Fissione
Fusione
Idrogeno



MATERIALI

Nano-Scienze e Nano-Tecnologie



E MOLTO ALTRO :

COME PARLARNE ?

$$i\hbar \frac{\partial \psi}{\partial t} = \mathcal{H}\psi$$

Piano dell'opera

I da Galilei a Einstein
(più veloci della luce)

II Luce: onda o particella?

[questo è - e resta - il problema...]

DUALISMO & INDETERMINAZIONE

III

[saperne moltissimo ma capirà poco...]

IV

Atomi (quasi) invisibili e divisibili

[modelli quantistici della materia]

VI

Il Lego della fisica

[due, molti, moltissimi atomi...]

V

Fisica e chimica abracettò
[la fabbrica delle meraviglie]

quantistica

VII

Nuclei atomici bollenti

[incredibilmente piccoli, densi,
pericolosi, indispensabili]