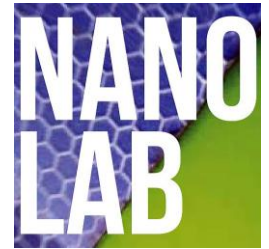




UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA



Dipartimento di Scienze Fisiche,
Informatiche e Matematiche

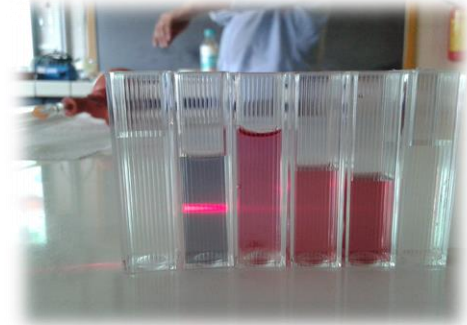
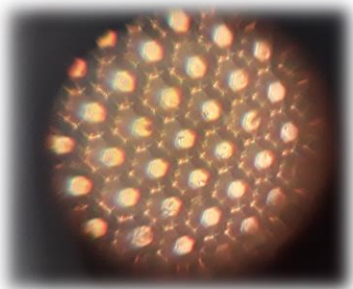
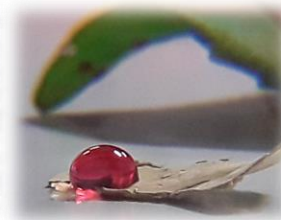
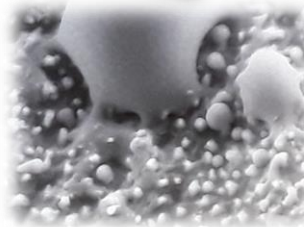
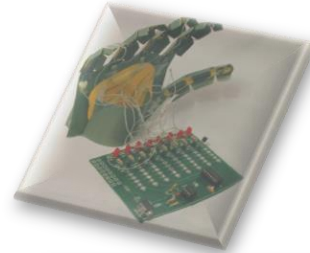
Un'ottica differente

Dalla ricerca alla scuola e all'industria



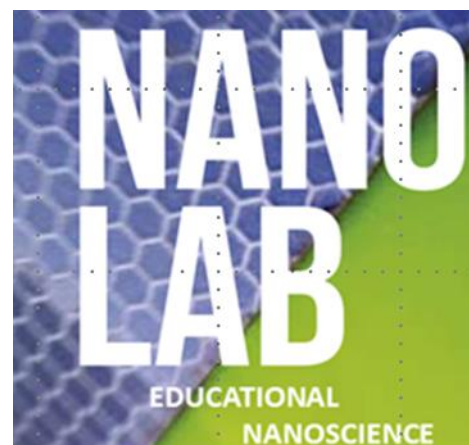
NANOLAB è un progetto didattico di UNIMORE finalizzato ad integrare le **nanoscienze** nel curriculum della scuola superiore.

www.nanolab.unimore.it

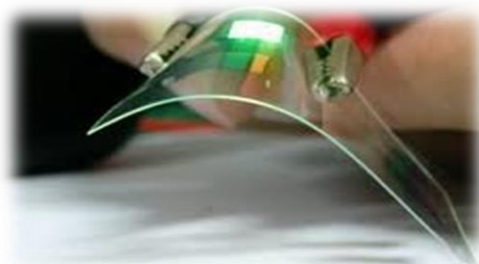


Perché le nanoscience

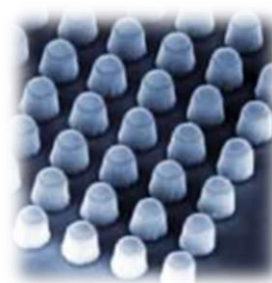
Le nanoscienze sono uno dei settori che sta maggiormente contribuendo all'innovazione tecnologica.



Autopulenti



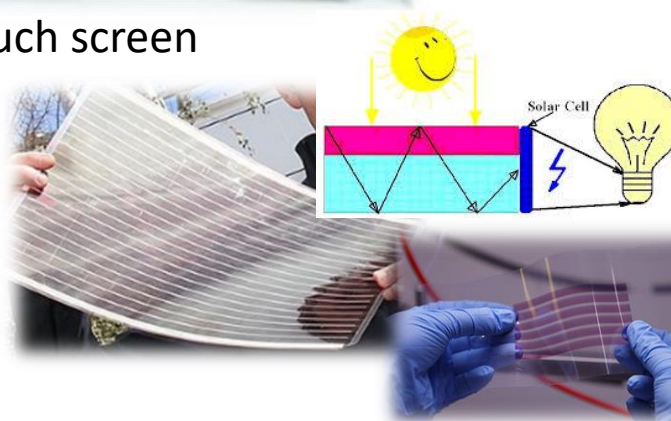
touch screen



Muscoli artificiali



Sensori tattili

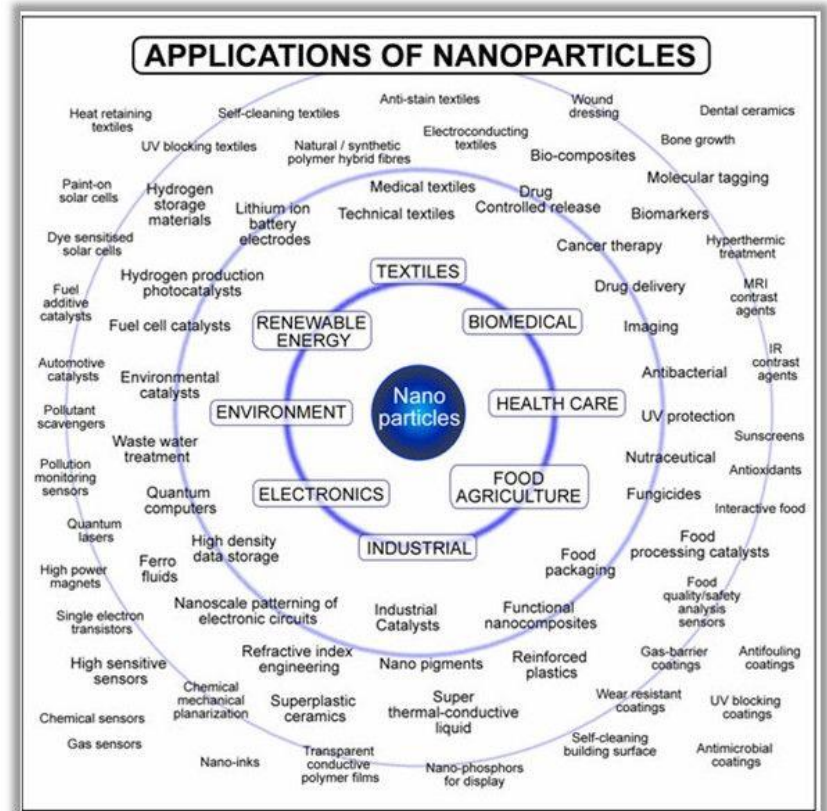
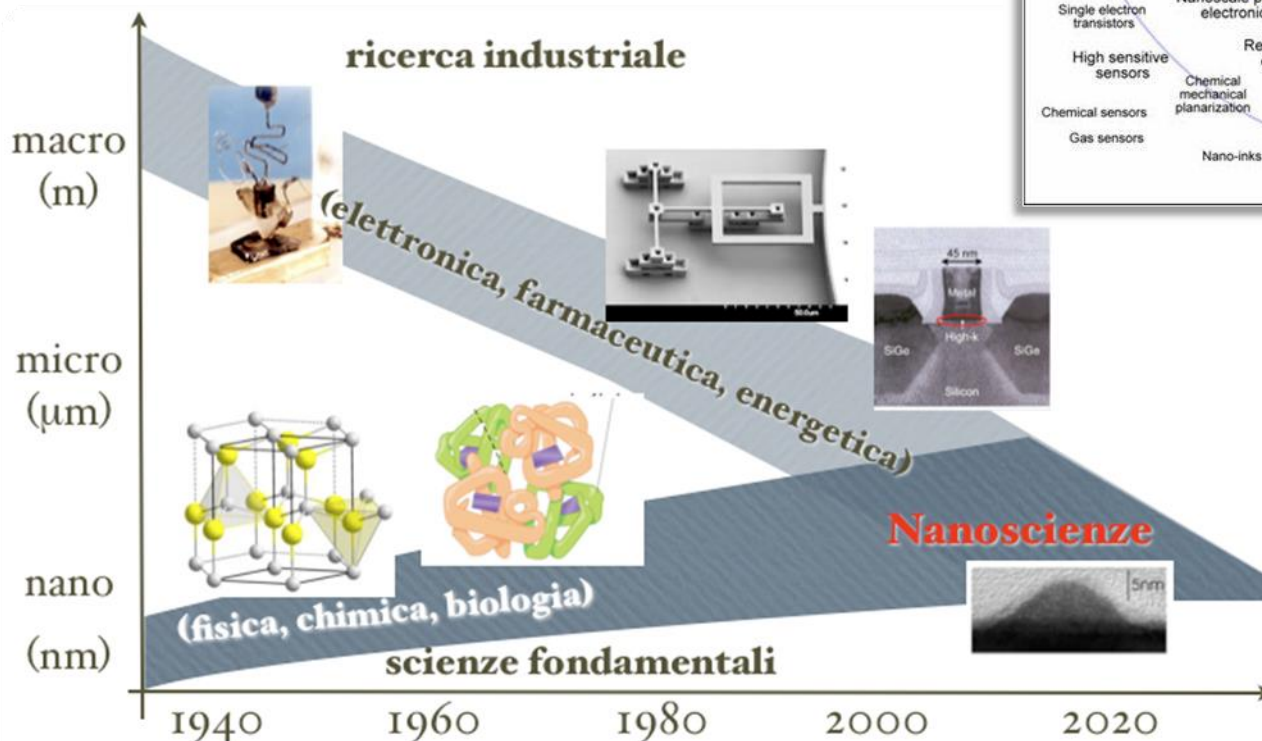


Fotovoltaico ad alte prestazioni



stent

Per “definizione” sono riferite a sistemi e particelle di dimensioni comprese tra **1 e 100 nanometri**



Integrano competenze di
Fisica Chimica
Ingegneria Medicina
e Biologia.

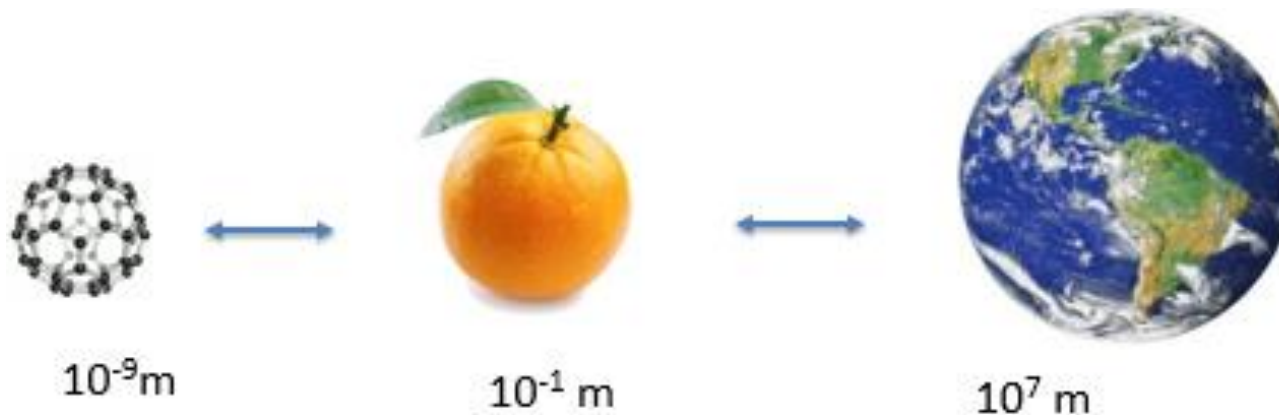
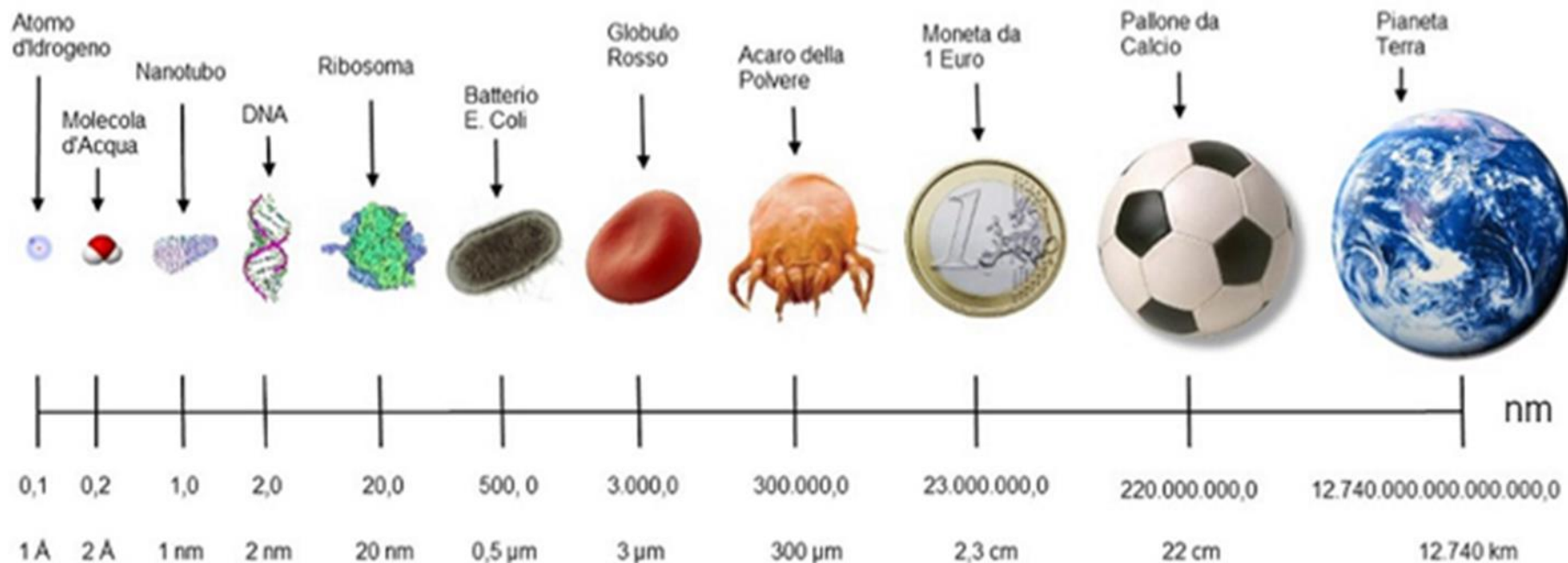


nano = 10^{-9}

1 nm = 10^{-9} m

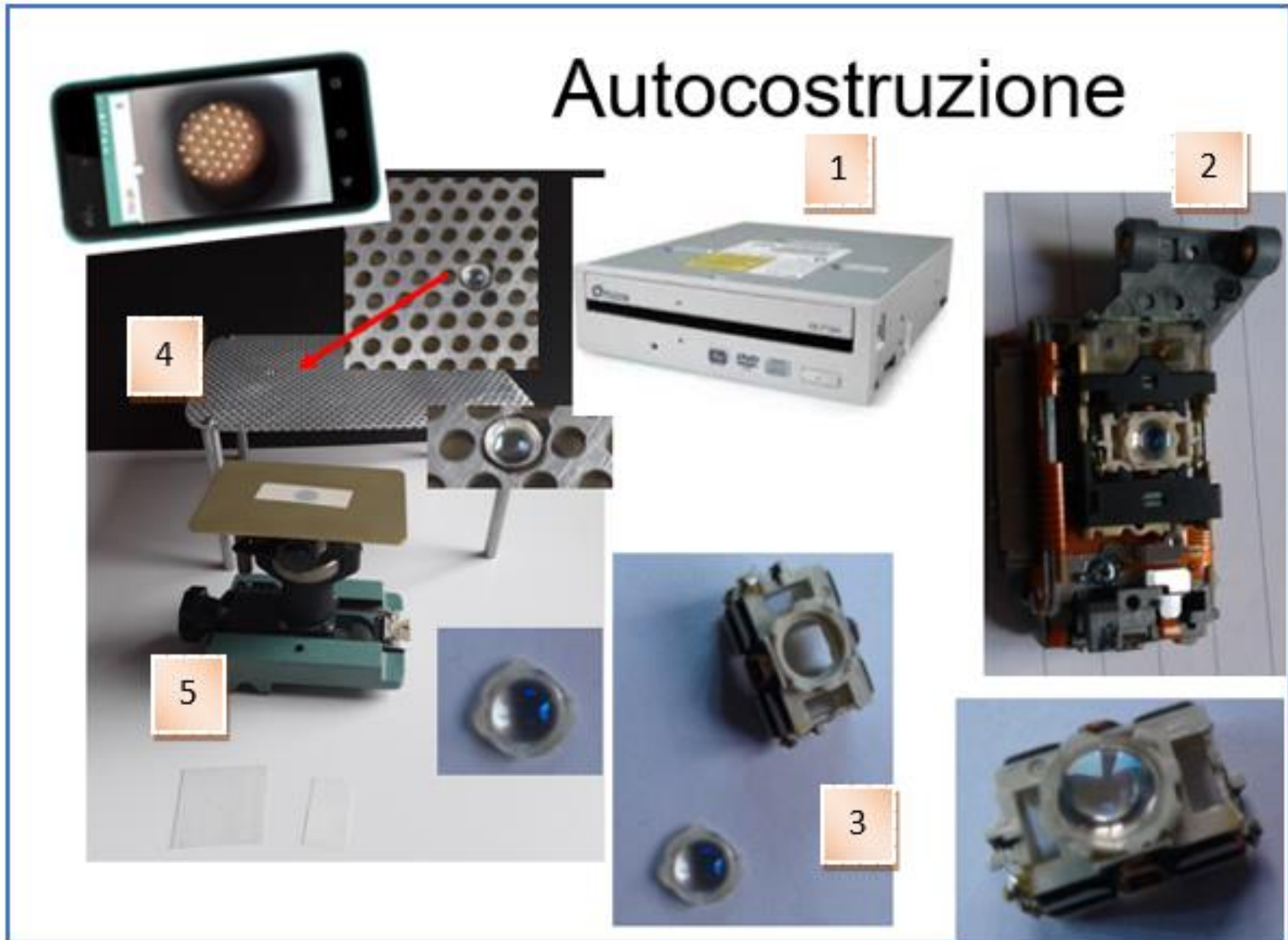
1 mm diviso in un milione di parti

Nanometro

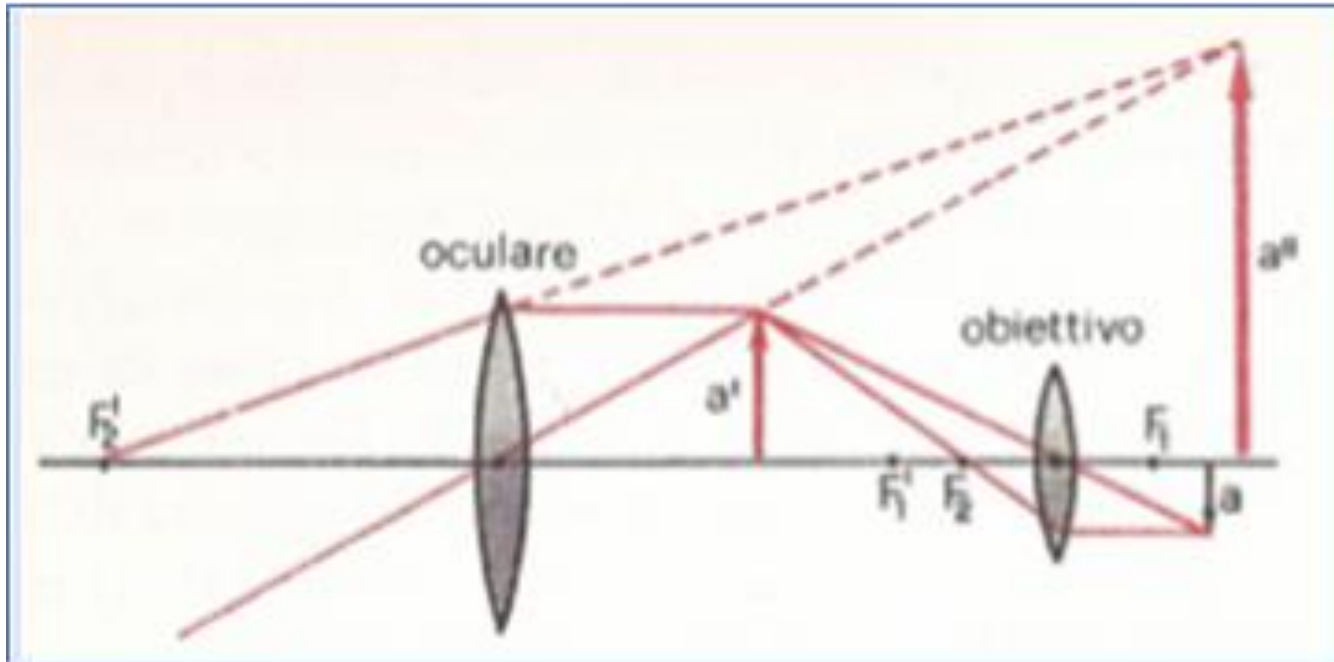
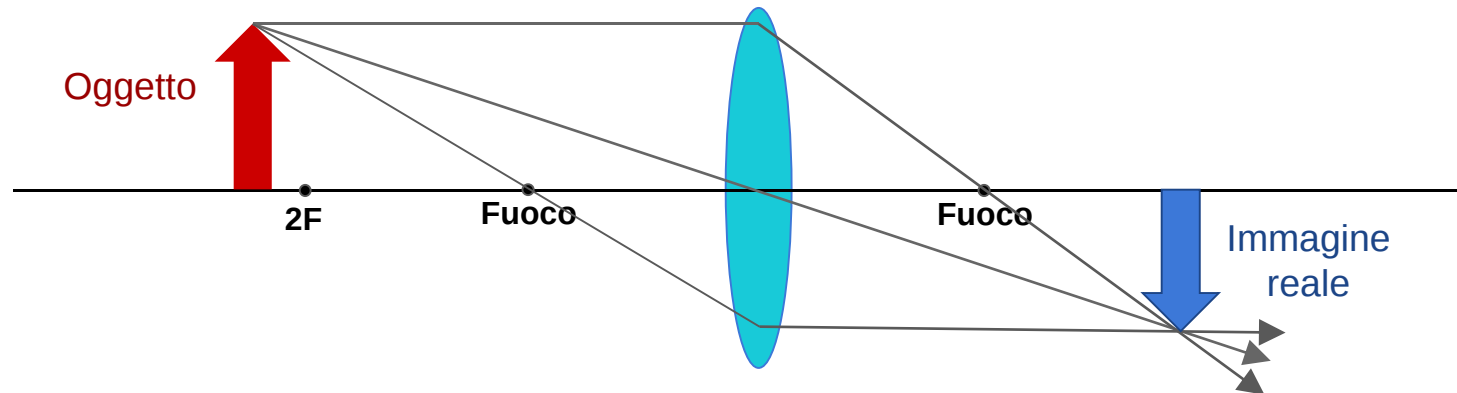


Microscopio con lo smartphone

Autocostruzione



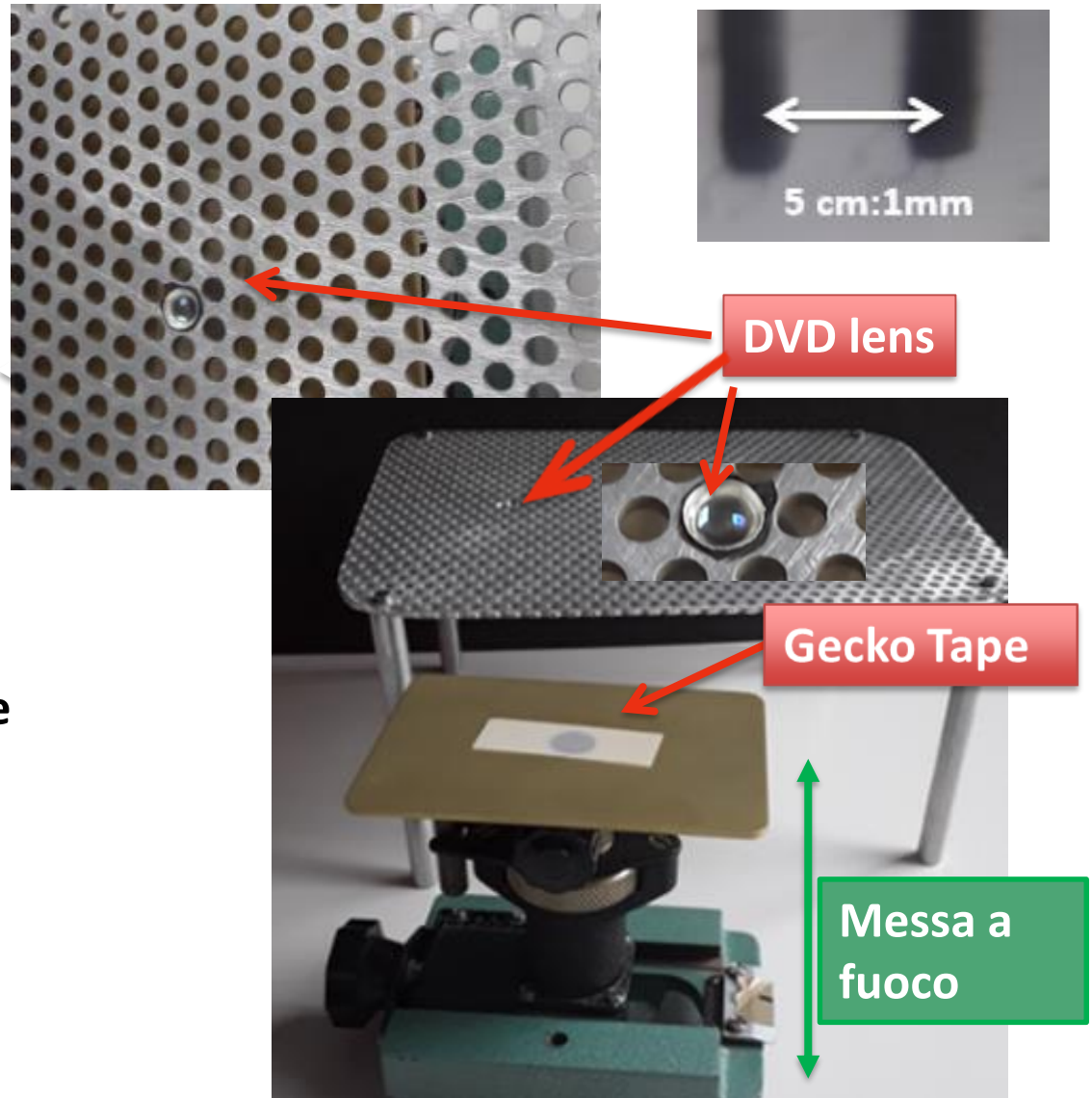
Ottica geometrica



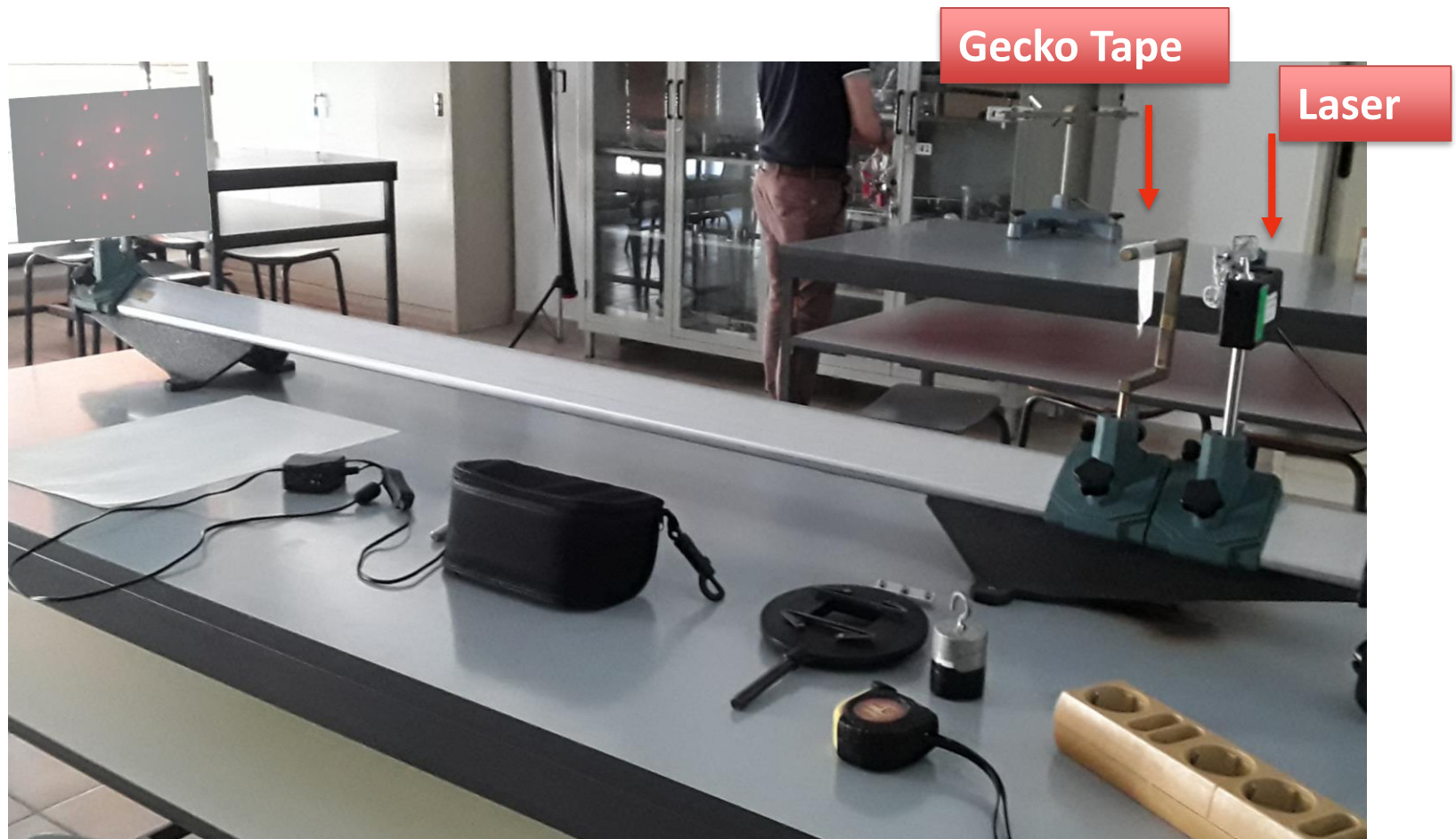
Costruzione di un microscopio con lo smartphone

ottica

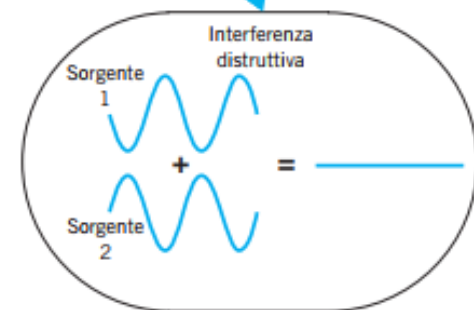
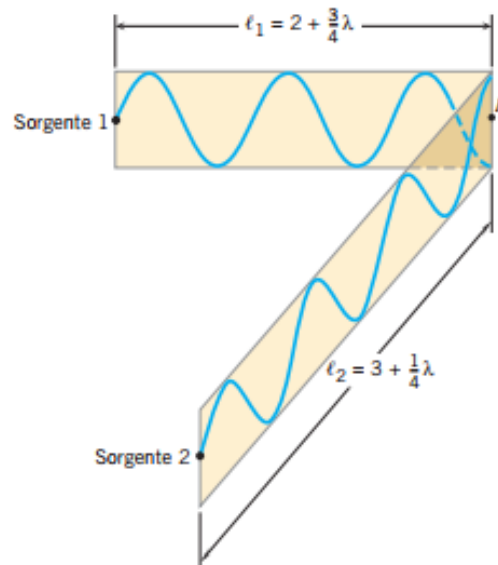
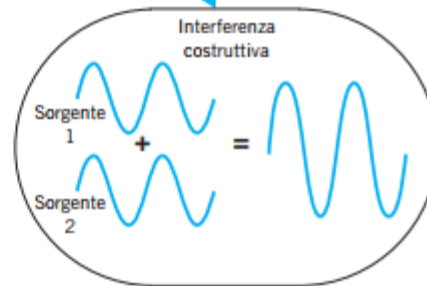
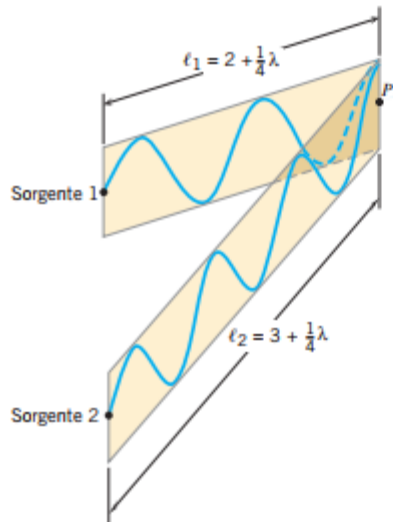
Teoria, ricerca di soluzioni,
realizzazione pratica, misure



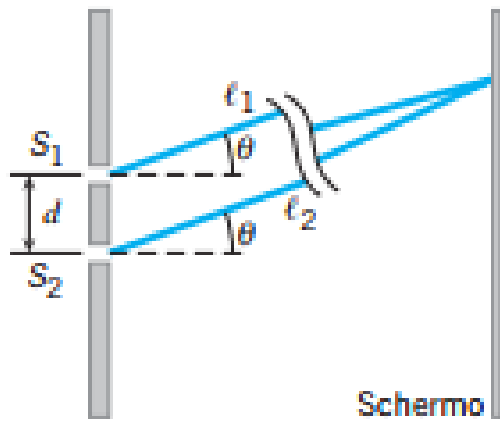
Studio con la diffrazione



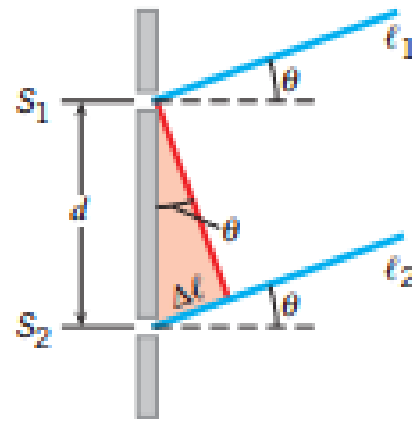
Interferenza



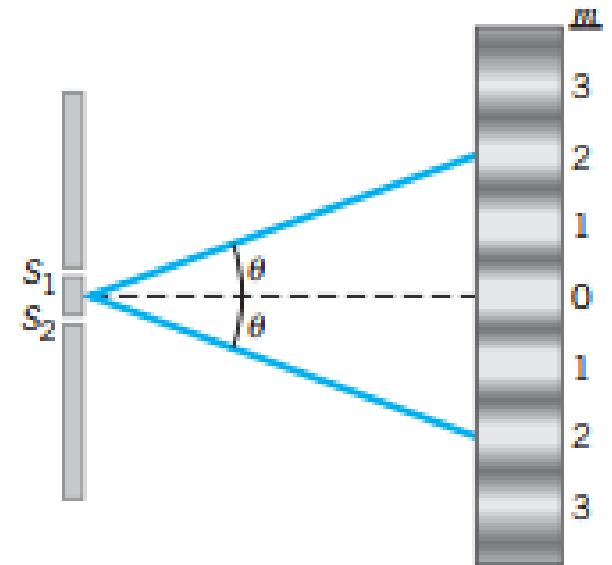
Differenza di cammino ottico



A



B



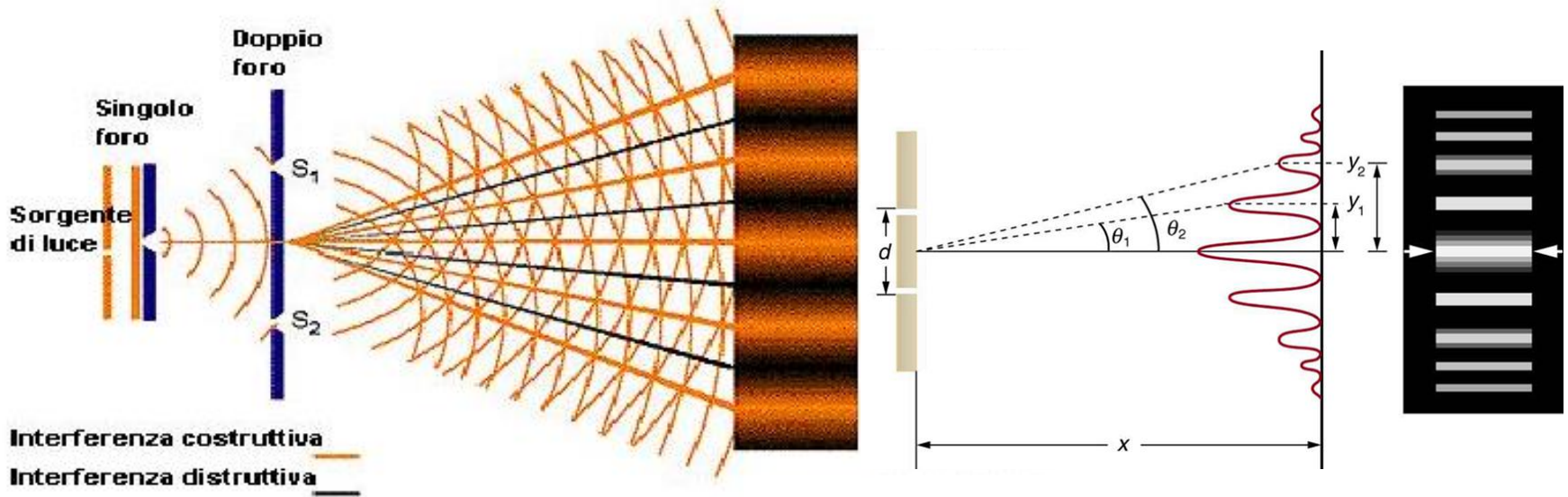
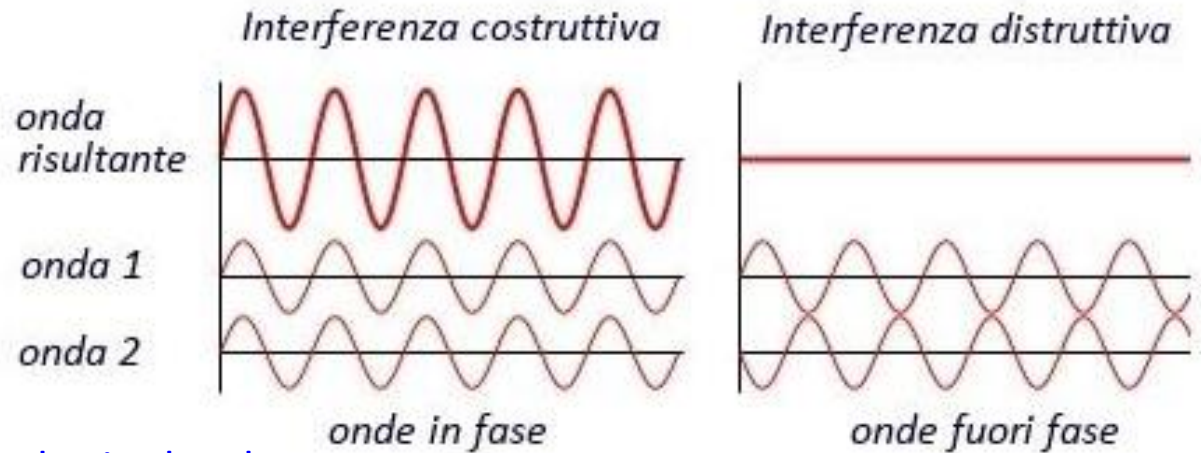
C

Interferenza

Sovrapposizione, in un punto dello spazio, di due o più onde.

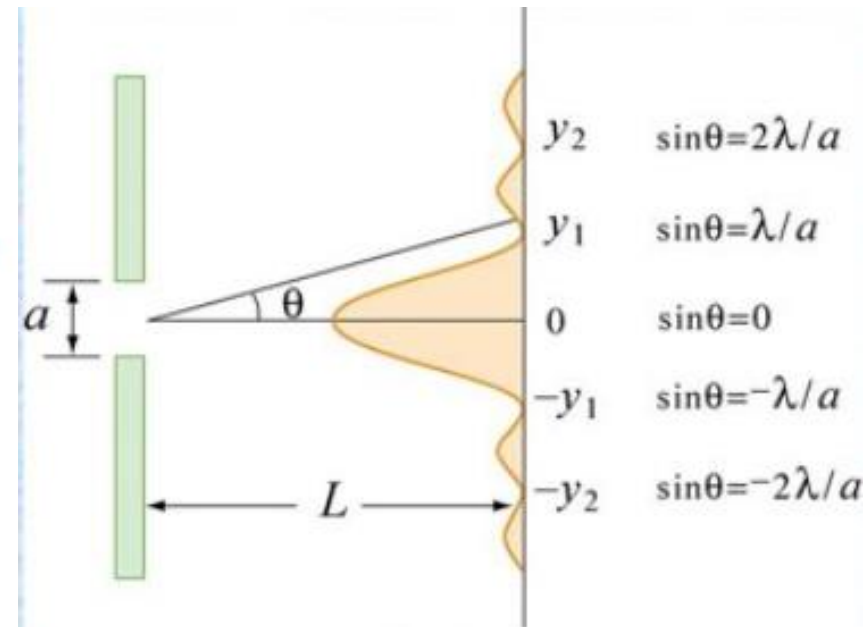
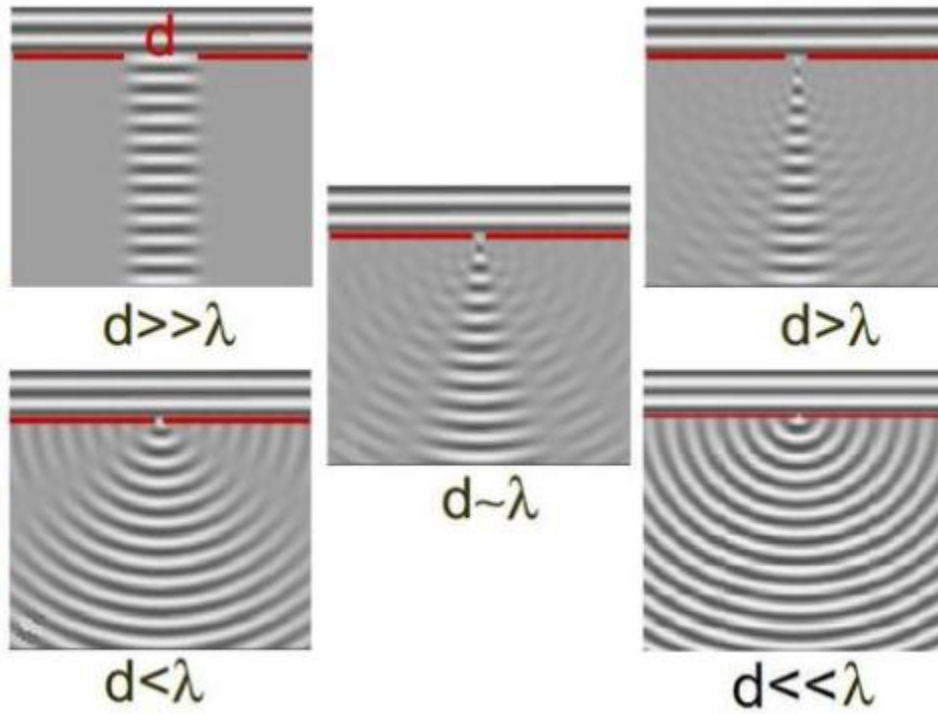
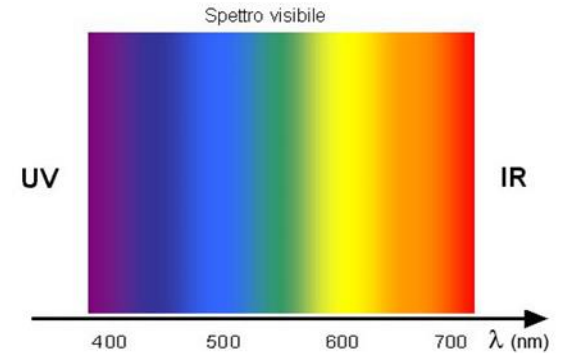
<http://phet.colorado.edu/>

<http://www.falstad.com/mathphysics.html>



Diffrazione

C'è diffrazione quando un'onda colpisce ostacoli o fenditure di dimensioni comparabili alla sua lunghezza d'onda

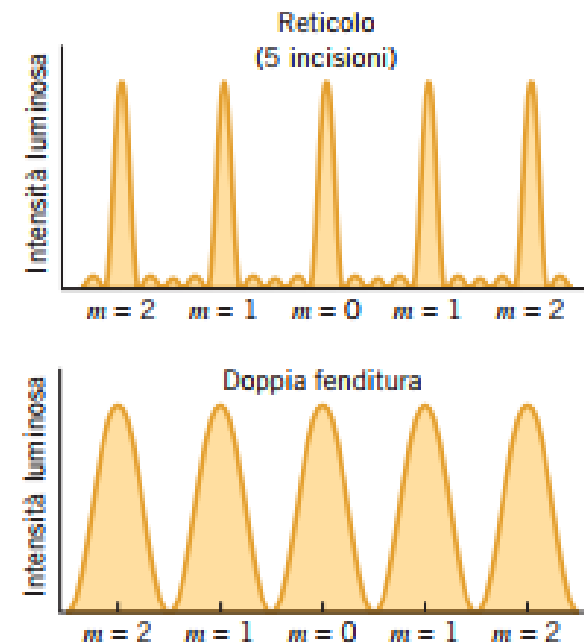
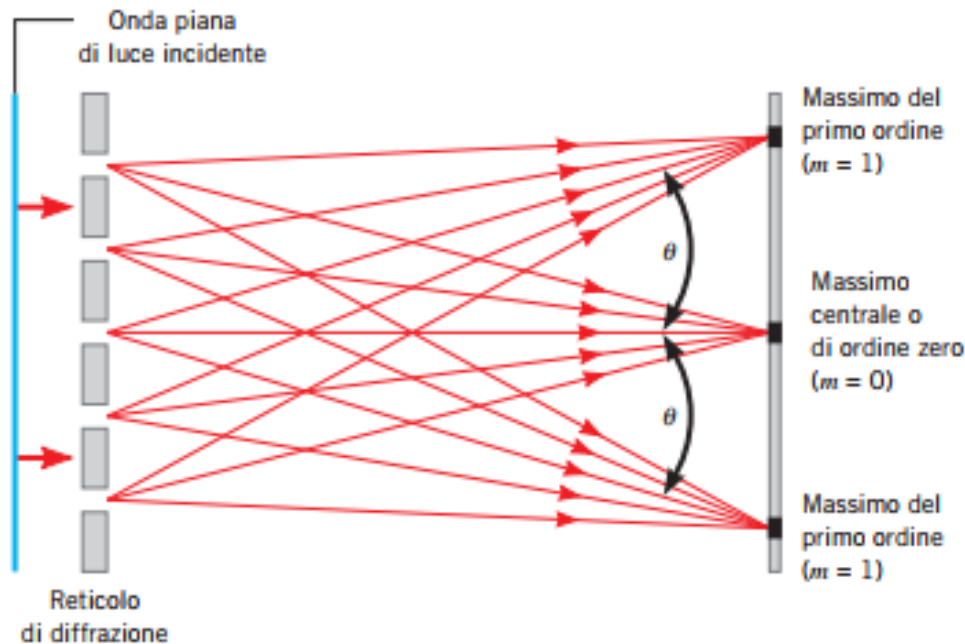
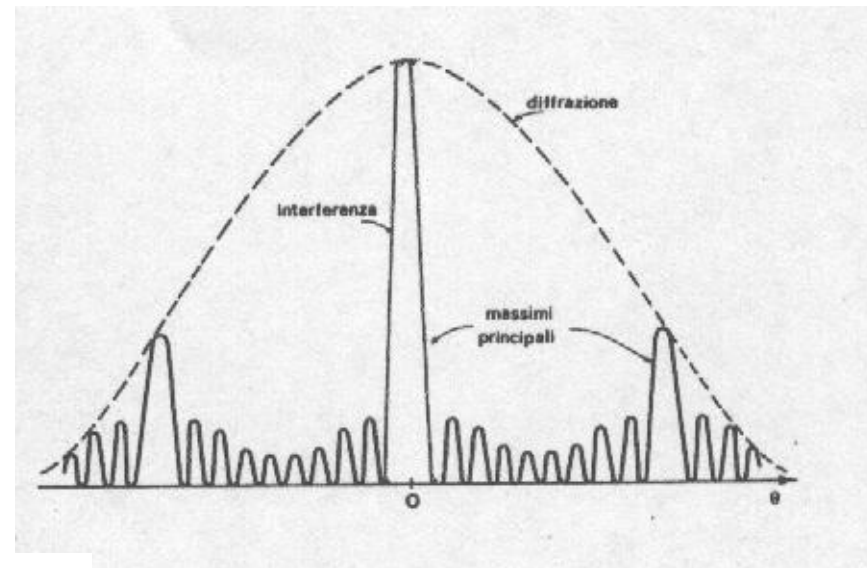


Reticolo di Diffrazione

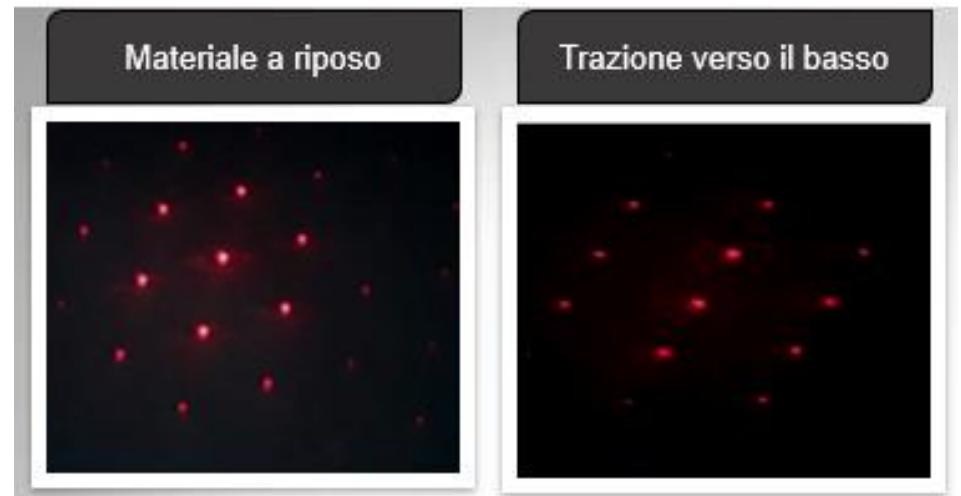
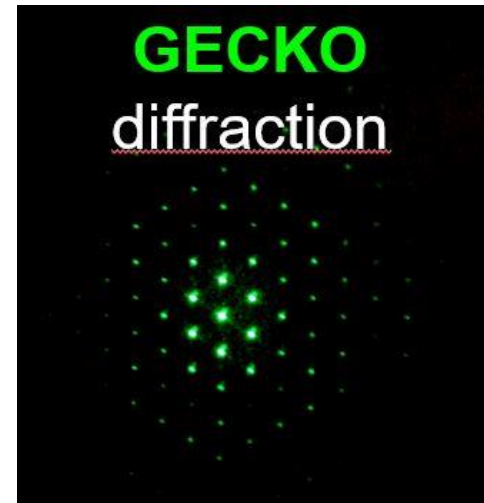
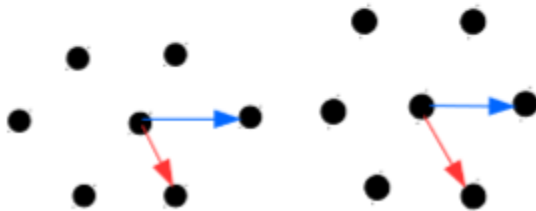
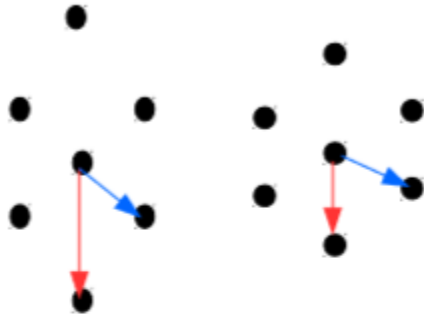
Un reticolo di diffrazione consiste in una lastra su cui sono praticate numerose incisioni parallele equispaziate e molto vicine fra loro

La distanza D tra due fenditure adiacenti si chiama PASSO del reticolo.

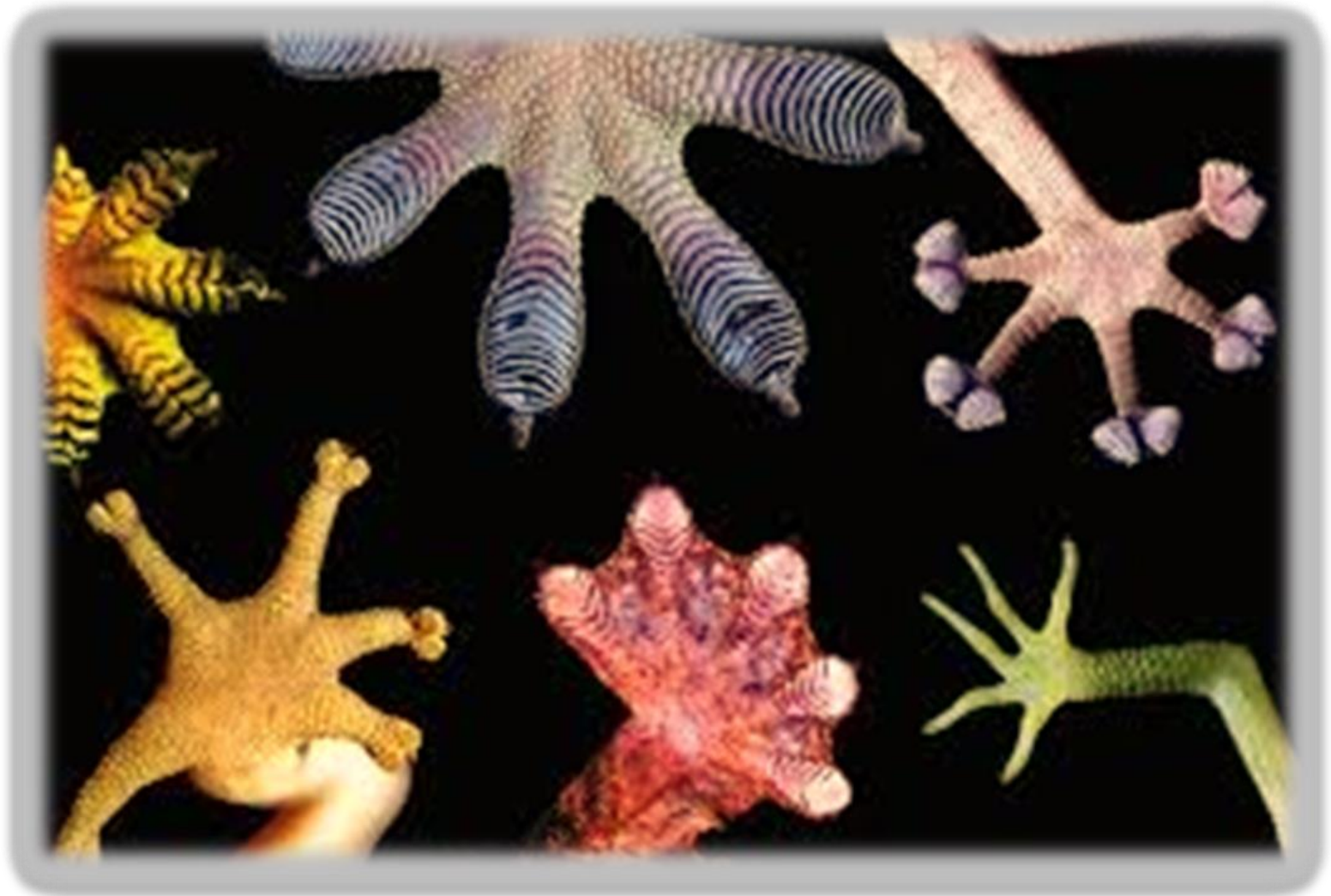
$$D \sin \theta = m \lambda$$



Reticoli flessibili



Thanks for your attention!



Contributi



In ordine alfabetico:

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UNIMORE
Corso di laurea in fisica

