

Alcune considerazioni sulla legge di riflessione e rifrazione della luce alla luce del principio di tempo minimo

Anche le formiche, nel loro piccolo...

- ... obbediscono al principio di Fermat (tempo minimo)
- [dettagli qui.](#)

- “When ants forage, they deposit pheromones to build a trail, and favorable trails become reinforced with increased usage.”



A 'refracted' trail of *Wasmannia auropunctata* workers at the

Anche la luce esplora tutte le strade ?

“The principle of least time is a completely different philosophical principle about the way nature works. Instead of saying it is a causal thing, that when we do one thing, something else happens, and so on, it says this: we set up the situation, and light decides which is the shortest time, or the extreme one, and chooses that path. But what does it do, how does it find out? Does it smell the nearby paths, and check them against each other? The answer is, yes, it does, in a way.”

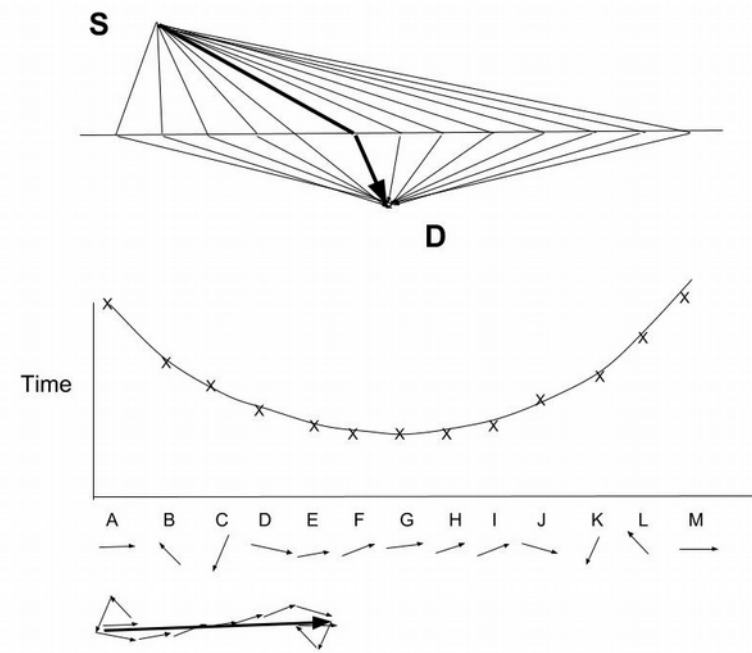
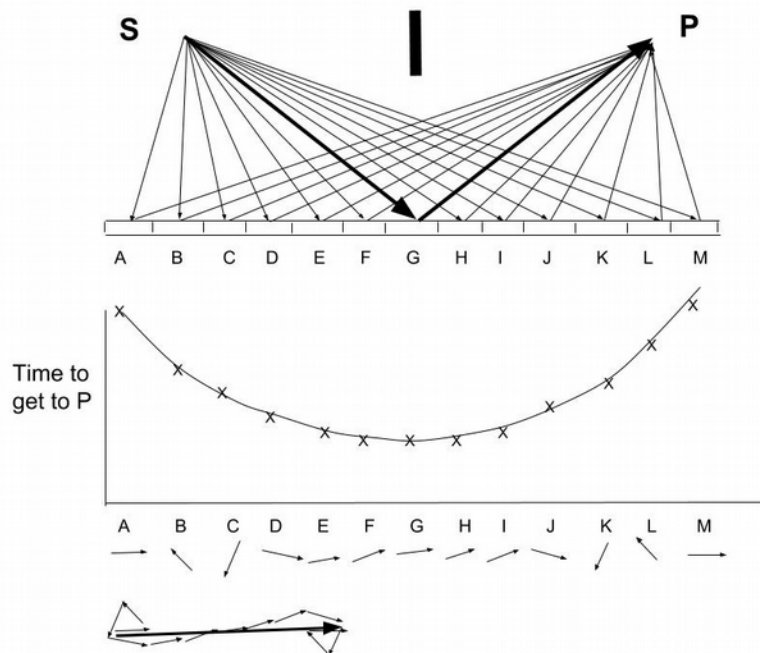
The Feynman lectures on Physics

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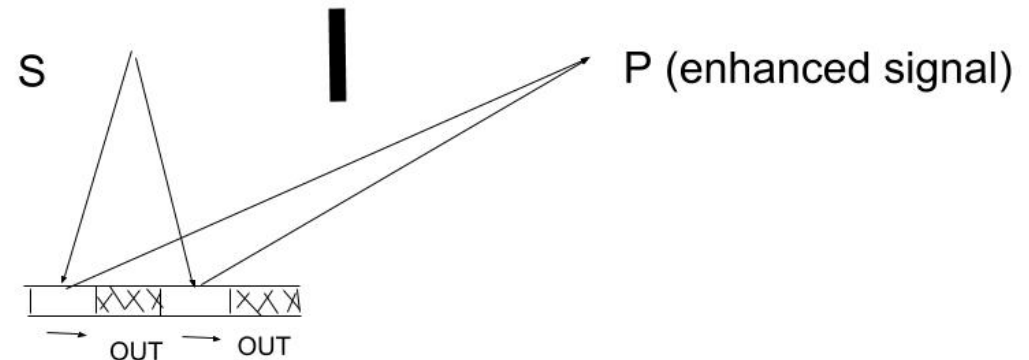
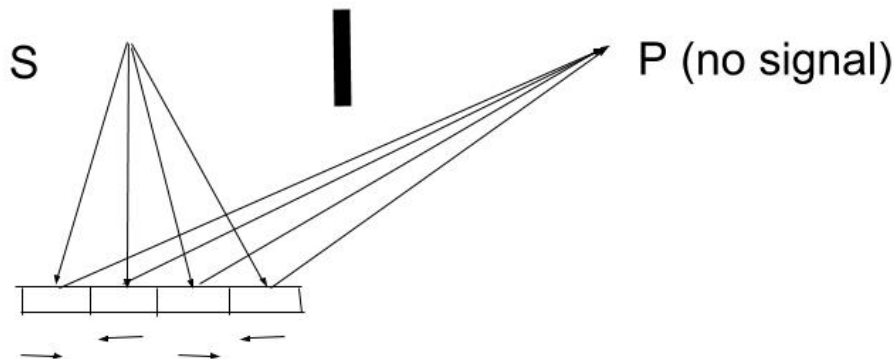
Esempio: riflessione

- Due to different distances of travel, the time taken for each path varies as shown in the middle figure, and correspondingly the phase varies as shown below that. The final amplitude is given by adding those arrows, and is indicated at the bottom of the figure
- It is evident that the major contribution to the final arrow's length is made by arrows E through I (from the central part of the mirror), whose directions are nearly the same because the timing of their paths is nearly the same. This also happens to be where the total time is the least indicated by the heavy arrow, which is the expected path from the law of reflection..



Controprova

- If we now divide that section (of A,B,C in the above figure) into four equal sections, they of course again cancel out as shown in the top section of the figure below.
- But if we now carefully **scrape two alternating sections** of those four sections (as shown in the bottom figure), then the signals due to the two reflecting sections **add up to give an intense signal**;
- That modified section of the mirror is of course now a **diffraction grating**.
- Più' dettagli :
 - Feynman Lect. on Physics; QED (R.P.Feynman, ADELPHI)
 - [questo link](#)



Miscellanea

- Campo di carica in moto
- Onde d'urto:
 - aerei supersonici
 - effetto Cherenkov nei reattori

Conclusioni

