

The Mirror Reflection Problem

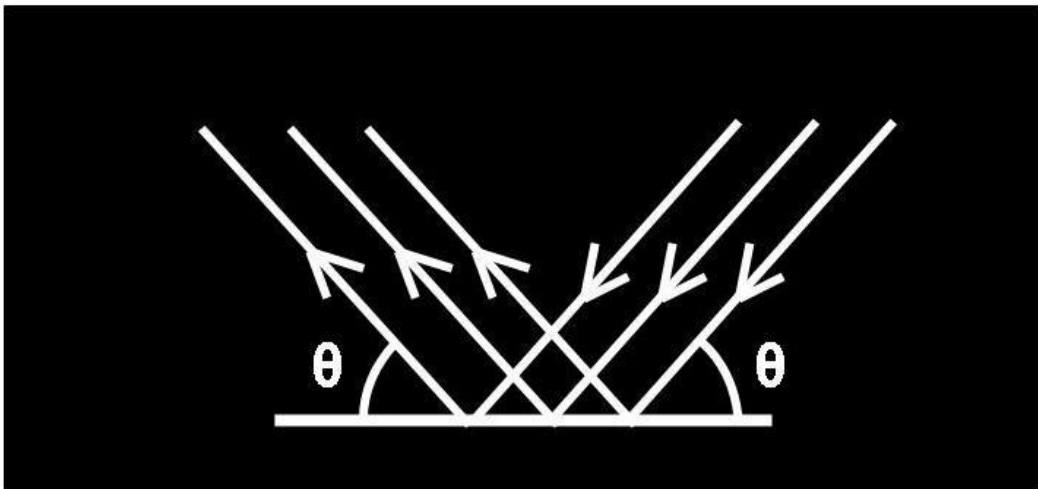


Part I

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The Mirror Reflection Problem Chapter 1

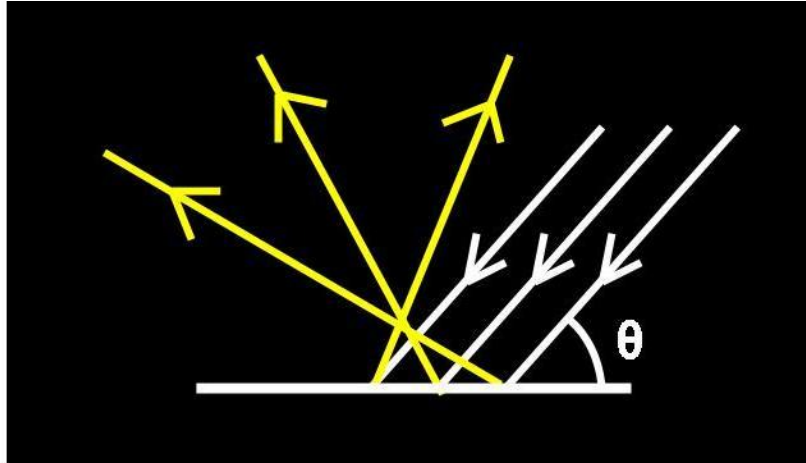


Light reflecting from a mirror

When I was 13 years old, which was around 1981, our science teacher explained something to us in optics about why light reflects evenly from a mirror but is scattered by a rough surface.

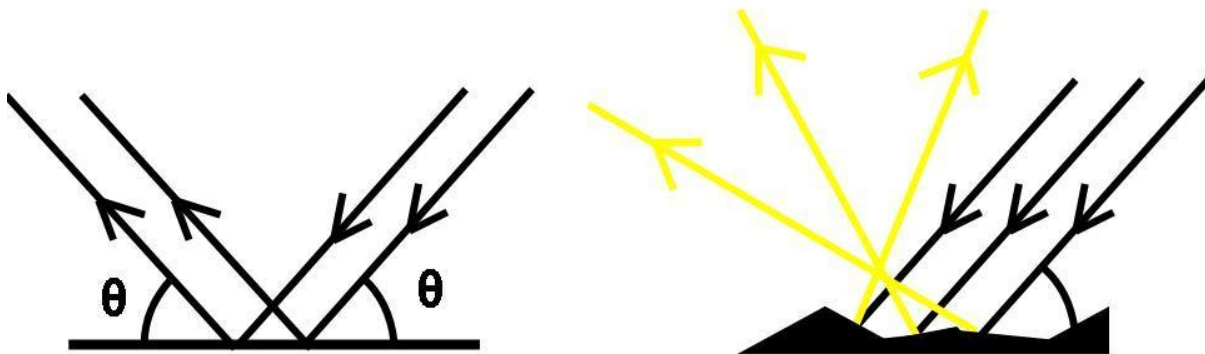
He said that if light hit the mirror in nice even parallel lines at angle θ (theta) then it would reflect off in a nice neat arrangement of parallel lines bouncing off to the left, also at angle θ .

The reason that the light did not scatter he said, was that the mirror was *smooth*.



Light scattering from a rough surface

By contrast, he said, if the light hits a *rough* surface then the reflected light scatters in all directions as shown here in yellow. The reason he said was that if one looks at the two surfaces under the microscope, the mirror is smooth. But the rough surface is not.



Under the microscope...

...the mirror is smooth

...but the rough surface is not

His explanation troubled me because I knew something. I knew that he was wrong. You see I knew about atoms. And I knew about photons. Photons and atoms had been mentioned in science class. Plus I'd read about them anyway. And I knew something. I knew that his explanation was wrong.

I knew it was wrong because at the atomic level, which is where the photons hit the atoms of the mirror's surface, the mirror is *completely rough*. If one were to look at the mirror through an electron microscope, which I knew about, the surface would be completely rough.

So why did the light not scatter?

This problem had been missed by physicists for more than three centuries because the explanation that I was given in class had been proposed by Isaac Newton and accepted as doctrine ever since. But I knew something that Newton didn't know about. I knew about atoms. In Newton's time he did not know about atoms or electron microscopes. Which is why he missed it.

Since the beginning of the twentieth century however, scientists have known about atoms. But they never questioned this Mirror Reflection Problem. And so they missed it.

I got this when I was thirteen years old. I did not say anything in class that day although the problem did trouble me. I just went away and thought about it. But it took me more than thirty years to solve it. The reason it took so long was because the solution *is not possible in the existing framework of Quantum Mechanics*. I had to correct some fundamental misunderstandings in Quantum Mechanics to solve it.

I did not solve the last piece of this puzzle until early in 2013 at which stage I e-mailed a number of scientists in Europe and America to explain the problem to them.

I have given part of the solution in three documents I released publicly in 2015, entitled "*The Mirror Reflection Problem*", "*First Step in Solving the Mirror Reflection Problem*" and "*Where to Next in the Mirror Reflection Problem*", as well as in a number of documents released between 2016 and 2018. However I have never released the full solution.

In these documents I will release the full solution for the first time. It will take some time to work through it as the solution is complex.

But we'll take it one step at a time.

I'm just introducing the problem for now.

The Mirror Reflection Problem



End of Part I