

How a Solar Eclipse Confirmed General Relativity - Adam Brown

1 MIN · YOUTUBE · [HTTPS://WWW.YOUTUBE.COM/WATCH?V=SRET3AHP0NS](https://www.youtube.com/watch?v=SRET3AHP0NS)

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SUMMARY

The video discusses the historical significance of solar eclipses in validating Einstein's theory of general relativity. During the 1910s, various expeditions aimed to measure light deflection near the sun, but many faced challenges, particularly due to World War I. Ultimately, a successful British expedition in 1919 confirmed Einstein's predictions, elevating him to international fame.

- Pointing a telescope directly at the sun can cause blindness; observing during a total solar eclipse allows for safe viewing.*
- Expeditions in the 1910s aimed to measure the deflection of light from stars near the sun during eclipses.*
- A German expedition in Crimea was interrupted by World War I, leading to the internment of its members.*
- Einstein initially made an error in his equivalence principle, predicting light bending would match Newtonian physics.*
- The war allowed Einstein time to correct his mistake, leading to a new prediction of light bending that was double the Newtonian expectation.*
- In 1919, Sir Arthur Eddington's British expedition successfully confirmed Einstein's revised predictions during a solar eclipse.*
- The successful observation marked a turning point, establishing Einstein as a global celebrity and validating his theory of general relativity.*

If you point a telescope at the sun, you'll go blind. If you point it just next to the sun, you'll just get washed out by the corona of the sun and you won't see anything. Except, there's one time when you won't get washed out, and that's during a total solar eclipse. So, during the 1910s, there was a whole bunch of expeditions sent to measure the deflection of light. They'd go, park out in the path of totality, and look through telescopes at the stars right next to the sun, and see if they moved in the sky.

>> >> And if they moved, how much they moved. There was a German expedition sponsored by the arms manufacturer Krupp, who went to the Crimea, and just before the solar eclipse happens, World War I breaks out, and now Germany and Russia are at war, and they're all like arrested and interned for the rest of the war, and so that that also fails. And it actually turns out to be a good thing for Einstein that they all failed, cuz it turned out that before he had full general relativity, his original equivalence principle argument was wrong, >> >> and led him to predict that the bending of light in general relativity would be the same as it was in Newtonian physics.

And so, during the war, while everything shut down, and no one is thinking about eclipse expeditions, he

corrects his mistake, and comes up with a new prediction that actually will be double the Newtonian prediction. And then in 1919, Sir Arthur Eddington launches a British expedition to go and observe the eclipses, and successfully comes back and declares that indeed it was the Einstein prediction. And that's really what launches Einstein as a global celebrity.