1
00:00:00,000 --> 00:00:13,000
[Silent]

2
00:00:13,000 --> 00:00:18,000
Just 370,000 years after the universe began in a big bang,

3
00:00:18,000 --> 00:00:23,000
all that existed was a hot plasma, similar to a candle flame.

4
00:00:23,000 --> 00:00:29,000
Protons and electrons, seen as the red and green balls, were bouncing around scattering the light.

5
00:00:29,000 --> 00:00:35,000
The particles of light, called photons (shown in blue), couldn't go far without colliding with an electron.

6
00:00:35,000 --> 00:00:41,000
As the universe cooled, the protons and electrons could pair up, forming hydrogen atoms,

7
00:00:41,000 --> 00:00:46,000
and the light was free to travel. It's been traveling freely ever since.

8
00:00:46,000 --> 00:00:48,000
Through the dark ages before there were stars...

9
00:00:48,000 --> 00:00:52,000
then past the formation of the first stars.

10
00:00:52,000 --> 00:00:57,000
As the universe expanded the photons lost energy, changing color.

11
00:00:57,000 --> 00:01:00,000
They went past clusters of galaxies.

12
00:01:00,000 --> 00:01:07,000
The path of the photon is slightly bent by the gravity of the clusters.

13
00:01:07,000 --> 00:01:13,000

Now and then, going through a cluster an electron (that green ball) would collide with some of the photons.

14
00:01:13,000 --> 00:01:15,000
They would change their path.

15
00:01:15,000 --> 00:01:20,000
Past more matter... More little wiggles due to gravity, mass.

16
00:01:20,000 --> 00:01:27,000
The photons traveled for 13.8 billion years before they reached the Planck detectors

17
00:01:27,000 --> 00:01:31,000
and died a glorious death, giving up the information that they had gleaned

18
00:01:31,000 --> 00:01:35,000
passing through the entire universe to our instruments