

10.3: The Spectroscope

The Spectroscope



When light strikes or enters a prism, it is dispersed into component colors. This is an example of spectroscopy. Light dispersion by D-Kuru is licensed under [CC BY-SA 3.0](#)

A star's color tells us a lot about the star: its temperature and perhaps even the star's life cycle. But to dig a bit deeper, scientists use a tool called the spectroscope and spectroscopy. In 1814, Joseph van Fraunhofer invented the modern spectroscope. The

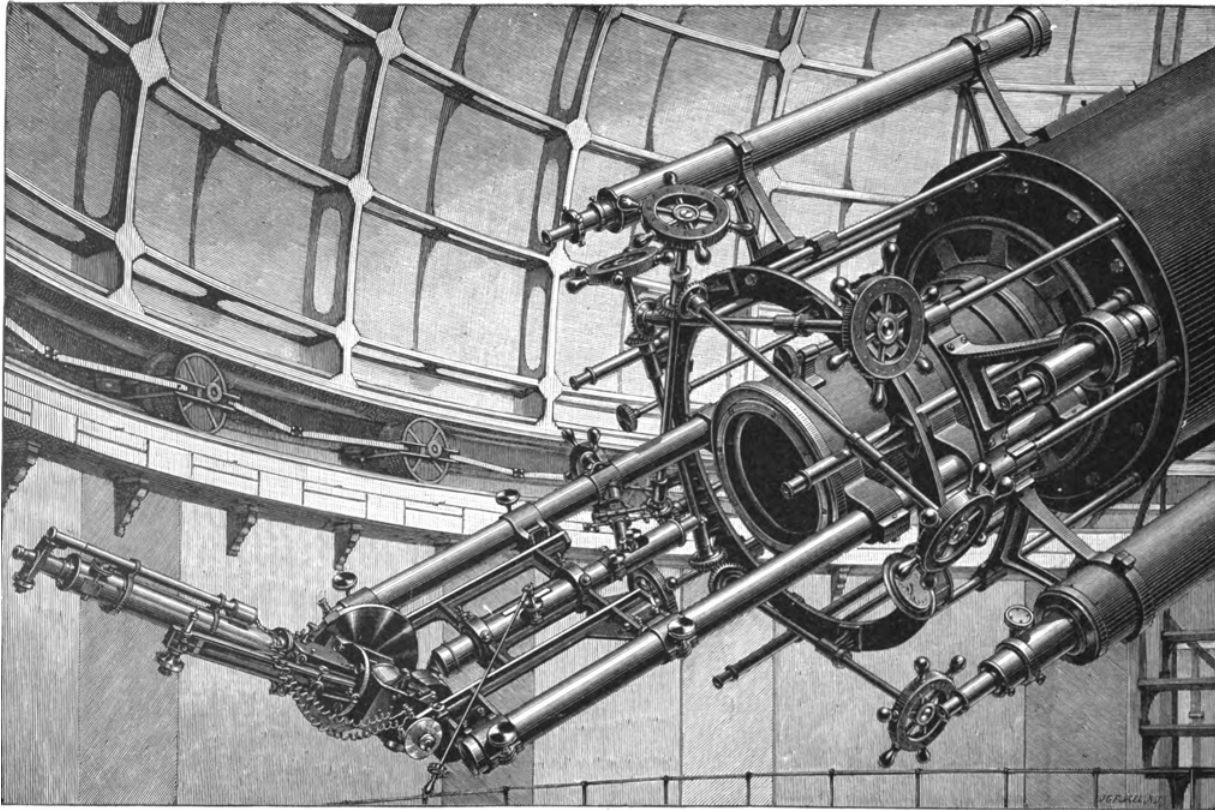
spectroscope basically uses a prism or diffraction grating to break light into its component colors, producing a spectrum. There is also a slit, where the light enters, and a telescope-like focuser.

The heart of the spectroscope — the component which breaks light into its component colors, is either a prism or a diffraction grating. Think of the diffraction grating as many small prisms on a thin sheet of plastic or glass; 500 or more rulings per inch. The CD is a good analogy to a diffraction grating.



The grooves of a CD can act as a diffraction grating, producing colors when light is reflected off of the CD. Interference-colors by Luis Fernández García is licensed under [CC BY-SA 2.0](https://creativecommons.org/licenses/by-sa/2.0/)

A spectroscope can be mounted on a telescope, collecting light from one object, such as a star or galaxy, to be passed through the spectroscope for analysis. ⁽¹⁾



Lick Observatory's Spectroscope, 1898. The actual spectroscope, which looks like a tube, is attached to the back of the telescope is in the lower left of the illustration. Star-Spectroscope by Julius Scheiner is in the [Public Domain](#) CC licensed content, Original

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