

Track spacing on a DVD*

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September 3, 2018, Version 2018-1

A DVD has grooves on its surface. Place a DVD inside white light, for example, what issues from a white LED. Observe the surface of the DVD. If the angles of illumination and viewing are set correctly, you will observe a colored strip. As you change the viewing angle, the color might change, from green to blue to perhaps red or orange. Under some conditions you may see iridescence similar to a rainbow. This 'think-aloud activity' is an invitation to explore this phenomenon. Each color has a specific wavelength. Using a geometry of the arrangement between the light source, the DVD and the camera or human eye, estimate the spacing between the grooves on the DVD. A few hints that may help you tackle this problem can be found in the references.

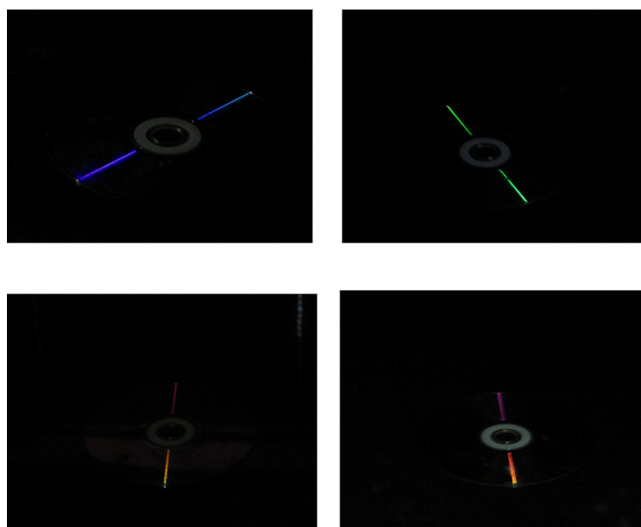


Figure 1: Colored stripes viewed on the surface of a DVD. The color changes as the viewing angle is rotated.

References

- [1] A.J. DeWeerd, *CD, DVD and Blu-ray disc diffraction*, The Phys. Teach. **54**, 300 (2016).
- [2] R.D. Luca, M.D. Mauro, O. Fiore, and A. Naddeo, *A compact disc under skimming light rays*, Amer. Jour. Phys. **86**, 169 (2018).

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