

Understanding seismic waves propagating through the Earth's core graphically

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In high school Earth Sciences, students learn how scientists use seismic waves to study the earth's internal structure. Discovery of the Earth's central core is one of the key topics presented in the textbooks, along with the introduction of the concept of the shadow zone. However, it is not easy to intuitively understand the behavior of seismic waves in the deep Earth, and this is one of the difficult topics to teach in classes. In this presentation, we will graphically summarize how the Earth's core influences the propagation of seismic waves using a simplified earth velocity structure model using trigonometric functions. Our method is similar to the ones used by Oldham, who was the first to suggest the existence on the earth's core seismologically, and by Lehmann, who discovered the Earth's inner core. We often teach the existence of core in relation to the history of seismology. Use of this proposed graphical method will help to understand such history as well. We demonstrate how to compute travel time curves using the simplified Earth velocity structure model using graphics and trigonometric functions.

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