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Title:	Diffraction effects in mechanically chopped laser pulses
Authors:	Gambhir, Samridhi (/jspui/browse?type=author&value=Gambhir%2C+Samridhi) Singh, Mandip (/jspui/browse?type=author&value=Singh%2C+Mandip)
Keywords:	Diffraction Laser pulses Light beam
Issue Date:	2018
Publisher:	American Association of Physics Teachers
Citation:	American Journal of Physics, 86(6), pp. 406-411
Abstract:	<p>A mechanical beam chopper consists of a rotating disc of regularly spaced wide slits which allow light to pass through them. A continuous light beam, after passing through the rotating disc, is switched-on and switched-off periodically, and a series of optical pulses are produced. The intensity of each pulse is expected to rise and fall smoothly with time. However, a careful study has revealed that the edges of mechanically chopped laser light pulses consist of periodic intensity undulations which can be detected with a photo detector. In this paper, it is shown that the intensity undulations in mechanically chopped laser pulses are produced by diffraction of light from the rotating disc, and a detailed explanation is given of the intensity undulations in mechanically chopped laser pulses. An experiment presented in this paper provides an efficient method to capture a one dimensional diffraction profile of light from a straight sharp-edge in the time domain. In addition, the experiment accurately measures wavelengths of three different laser beams from the undulations in mechanically chopped laser light pulses.</p>
URI:	<a href="https://aapt.scitation.org/doi/full/10.1119/1.5029821">https://aapt.scitation.org/doi/full/10.1119/1.5029821</a> ( <a href="https://aapt.scitation.org/doi/full/10.1119/1.5029821">https://aapt.scitation.org/doi/full/10.1119/1.5029821</a> ) <a href="http://hdl.handle.net/123456789/2029">http://hdl.handle.net/123456789/2029</a> ( <a href="http://hdl.handle.net/123456789/2029">http://hdl.handle.net/123456789/2029</a> )
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