

## **Pencil on paper as low cost alternative resistors**

*Monday 21 May 2018 18:30 (15 minutes)*

Pencil leads can be used to draw resistors, which are low-cost and easy to obtain. Not all types of pencils are considered good for pencil resistors because pencil lead is made up of graphite, an allotrope of carbon. Resistance of graphite varies with the grades used during manufacturing, as such we aimed to review and test several types of pencils would be best for developing DC pencil circuits. The resistance of pencil traces was found to depend on pencil grade used in drawing, width, and thickness or numbers of layers. The 6B grade was found to be the best pencil for drawing resistors. The applied pressure and bending paper inward and

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**Session Classification:** A02:Physics Education (Poster)

**Track Classification:** Physics Education