

Practical 3 – Topic 2

The length of a hanging slinky as a function of the number of turns

Note: experience shows that students love to destroy a slinky as soon as they get their hands on it!

Criteria assessed

- DCP
- CE

Materials needed

- Slinky
- Meter rule or tape measure

What to do

Hang an ordinary long slinky by fixing one of its turns to the ceiling (or a stand placed high on a table) so that the numbers of turns hanging freely is N . Measure the length L of the part of the slinky that is hanging.

- How does this length L depend on N ?

Theory suggests that $L \propto N^p$.

- How should the variables be plotted in order to verify this expression and at the same time determine p ?
- Can you provide a theoretical justification for the value of p obtained from your analysis?
- Suppose that you now add a small mass to the bottom of the freely hanging end of the slinky. Does your previous result change?