

Abstract Submitted  
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**Nesting in Graphical Representations in Physics** HUNTER CLOSE,  
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We develop a theoretical model for understanding one way, “nesting,” that space is  
used in graphics from within and outside physics. Nesting can be used to increase a  
graphic’s capacity for displaying several dimensions of information, beyond the two  
dimensions afforded by a flat page. We use the model of nesting to analyze previously  
observed student difficulties with electromagnetic waves, to predict how physics  
students would interact with certain graphics, and to generate new multivariate  
graphics in physics for instruction and for research on student thinking. Finally  
we apply the nesting model to explain the multidimensionality of certain kinds of  
gestures in physics education.

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