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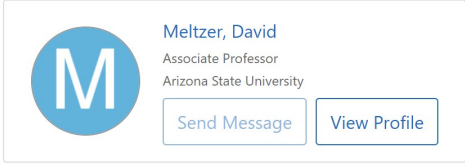
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Teaching algebra through physics-of-motion activities

Fri. Jun 3, 2022 8:25 AM - 9:00 AM River Birch A 12 Attending 0 Questions

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Speaker





Meltzer, David

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Preservice elementary and middle school teachers are often taught mathematics as if it were an isolated subject, a set of abstract algorithms lacking deeper meaning or reference to the real world. This project is providing preservice elementary and middle school teachers with an opportunity to deepen their understanding of mathematics content by incorporating physics-of-motion activities into an existing mathematics course during undergraduate preparation. This workshop will guide participants through a sample project lesson using simulated data of small carts rolling on low-friction tracks. The concept of a function is brought to life through tables of paired position/time values, while graphing of both linear and non-linear functions proceeds naturally through the creation of position vs. time, velocity vs. time, and acceleration vs. time graphs representing the cart's motion. The interpretation of the equation of a straight line and the meaning of slope is embodied in the relationship between the cart's velocity and the slope of the position-time graph; positive and negative slopes correspond to motions in opposite directions. Translations between different representations are accomplished by predicting and then observing the motion graphs that correspond to various motions that are first described in words and/or illustrated in diagrams. Equations that describe the motions are first written in symbolic form and then quantified more precisely through actual measurements of moving objects.