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Video Analysis of a Plucked String: An Example of Problem-based Learning[1] CHRISTOPHER D. WENTWORTH, Department of Physics, Doane College, Crete, NE 68333, ERIC BUSE, Children's Mercy Hospital, Kansas City, MO 64108 — Problem-based learning is a teaching methodology that grounds learning within the context of solving a real problem. Typically the problem initiates learning of concepts rather than simply being an application of the concept, and students take the lead in identifying what must be developed to solve the problem. Problem-based learning in upper-level physics courses can be challenging, because of the time and financial requirements necessary to generate real data. Here, we present a problem that motivates learning about partial differential equations and their solution in a mathematical methods for physics course. Students study a plucked elastic cord using high speed digital video. After creating video clips of the cord motion under different tensions they are asked to create a mathematical model. Ultimately, students develop and solve a model that includes damping effects that are clearly visible in the videos. The digital video files used in this project are available on the web at http://physics.doane.edu .

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