1158-35-21 **Phoebe A Coy*** (`pcoy@ucmerced.edu`), **Arnold Kim** and **Chrysoula Tsogka**. *A Method of Fundamental Solutions for the One-Dimensional Wave Equation.* Preliminary report.

We develop a new method for approximating solutions to the one-dimensional wave equation with various boundary conditions, including moving boundaries. Our method is inspired by the Method of Fundamental Solutions for Laplace's equation. We find an approximate solution $u(x,t)$ that satisfies the wave equation and initial conditions exactly, and satisfies the boundary conditions at N points in time. Our method has significant advantages over the finite differences method, namely that the error produced by our method does not increase in time, and that it has the flexibility to be implemented for moving boundaries. This work will serve as a foundation for implementation in two and three dimensions. (Received February 04, 2020)