Abstract Submitted
for the NEF09 Meeting of
The American Physical Society

A "Spacetime Trigonometry" approach to Relativity ROB SALGADO, Mount Holyoke College — Inspired by Yaglom and Taylor & Wheeler, we use familiar techniques from the analytic geometry and trigonometry of Euclidean space to develop the corresponding analogues for Galilean and Minkowski spacetimes and immediately provide them with physical interpretations. Upon defining a "unit circle", we define the notions of "angle", "circular functions", and related constructions [including visualizations of tensor algebra]. A feature of this ormalism is the ability to clarify the analogies among the three geometries, especially the Galilean limits of results from Special Relativity. In addition, the formalism has a natural extension to the deSitter spacetimes of General Relativity. We describe how this approach can be used to introduce Galilean and Special Relativistic concepts at the introductory level (with minimal mathematical prerequisites), followed by a systematic development to modern presentations of Special and General Relativity at the advanced-undergraduate level.

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Date submitted: 07 Oct 2009 Electronic form version 1.4