Chesapeake Section of the
American Association of Physics Teachers
Spring 2023 Semi-Virtual Meeting
April 1, 2023 @ JAMES MADISON UNIVERSITY.

Contribution ID: **4** Type: **talk (15-minute)**

RIDING ON A LIGHT BEAM: ACCELERATION AND MASS RISE

Saturday, April 1, 2023 10:30 AM (15 minutes)

This presentation is a continuation of one I gave on April 1, 2022 on the velocity triangle and the Brehme Angle as a graphical solution to problems in Special Relativity. This presentation applies those concepts to a body undergoing uniform linear acceleration, to determine that linear acceleration is rotary motion in four dimensions. The simple graphical solution satisfies the classical equations of motion v=at and s=1/2at2 at small angles of rotation (v«c), and observed relativistic mass rise for rotational angles for greater velocities. The simple trigonometric model predicts that an unaccelerated observer will measure the body's location along a hyperbolic worldline, consistent with the trajectory derived in Gravitation (Misner, Thorne and Wheeler) using tensors.

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Session Classification: Morning Session 2B