## Two-Observer Spacetime Diagrams

## Physics II: Modern Physics

College of the Atlantic

- 1. Anastajia is at rest and Beowulf is moving to the right at a speed of  $\beta = 3/4$ . Beowulf's origin (x' = 0) passes Ana's origin at t = t' = 0.
  - (a) What is the value of  $\gamma$ ?
  - (b) The clock at the origin of Beowulf's frame reads 1s. What is the time reading of this event in Ana's frame?
  - (c) The clock at the origin of Beowulf's frame reads 2s. What is the time reading of this event in Ana's frame?
  - (d) Draw a quantitatively accurate spacetime diagram for this situation. Include the t' axis. Indicate t' = 1s and t' = 2s on the appropriate locations on the diagram.
- 2. The figure below shows a two-observer spacetime diagram.
  - (a) What is the speed of the moving observer?
  - (b) For each event (A,B,C), determine the coordinates in the unprimed and primed frames.

