

[mex218] Interstellar speed control

In some science fiction world it takes space cops to enforce the universal speed limit c . Every spaceship has a built-in device that sends out signature light signals in all directions when it passes certain markers arrayed in space. The markers are stationary relative to police headquarters. One inbound spaceship traveling at constant speed v sends out a signal at marker A three light-years away from police headquarters and then another signal at marker B only two light-years away. The two signals arrive at headquarters just four months apart, which draws the attention of a young policeman (still in training). Does he have evidence of a violation and a reason to issue a speeding ticket? What is the speed of the spaceship relative to the markers?

Solution: