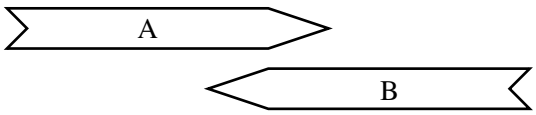
## [mex236] Time on the fly

Spaceships $A$ and $B$, each having proper length $\ell_0 = 100\text{m}$, pass each other moving in opposite direction with relative velocity of $v_r = 7 \times 10^7 \text{m/s}$. Each spaceship has synchronized clocks at both ends, front and rear.
The clocks at the front end of spaceship $A$ and at the rear end of spaceship $B$ happen to strike noon simultaneously, $t_{AF} = t_{BR} = 12:00:00.000000000$, when they are opposite one another. What are the readings $t_{AR}$ of the clock at the rear end of spaceship $A$ and $t_{BF}$ of the clock at the front end of spaceship $B$ when they are opposite each other? Express your answers to nanosecond precision




**Solution:**