

UNIVERSITY OF SURREY

Department of Physics



Space, Time and Relativity

Tutorial Sheet 2a - supplementary questions

(1) Starting from the Lorentz transformation equations for $\Delta x'$ and $\Delta t'$, derive the velocity transformation equation for v'_x .

(2) If a sprinter runs the 100m at a speed of $0.6c$ (clearly on performance enhancers) then calculate a) his time according to the judges and b) his time as measured by his own watch. For (b) use both time dilation and length contraction arguments to show they give the same result.

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