PHY215 Homework Derivation "D2"

3 points
Include with your HW1 collection
Due: September 13, 2017

In class I used the example of a swimmer who compares swimming across a stream and up and down the stream. The swimmer has a speed of v relative to still water and the stream is a distance $L_\perp$ across. For the particular situation in which the river is flowing with velocity u, from Right to Left (like in the slides), show that the round trip time to go across and back (ABA) is:

$$T_\perp = \frac{2L_\perp}{v} \frac{1}{\sqrt{1 - u^2/v^2}}$$