

Assignment on STR-3/S Chattopadhyay

1. Derive the Lorentz Transformations equations.
2. Discuss the simultaneity of events in respect to Lorentz transformation.
3. Two inertial frames S and S' move relative to each other with velocity $v = 0.6c$ along the x-axis. An event occurs in frame S at $x = 600$ m, $t = 4$ μ s. Find the coordinates x' and t' in frame S'.
4. Two inertial frames S and S' move with relative velocity $0.5c$. If an event occurs at $x = 300$ m, $t = 2$ μ s S, find x' and t' .
5. Frame S' moves with velocity $0.6 c$ relative to S. An event occurs at $x = 600$ m, $t = 4$ μ s in S. Determine the coordinates in S'.
6. A frame moves with velocity $0.8 c$. If an event in S occurs at $x = 900$ m, $t = 3$ μ s, calculate x' and t' .
7. An event occurs at $x = 200$ m, $t = 1$ μ s in S. Frame S' moves at $0.4 c$. Find the transformed coordinates.
8. Frame S' moves at $0.7 c$. If $x = 1000$ m and $t = 5$ μ s in S, determine x' .
9. An event occurs at $x = 400$ m, $t = 2$ μ s. Find the coordinates in a frame moving with velocity $0.9 c$.
10. Frame S' moves at $0.3 c$. If $x = 500$ m, $t = 3$ μ s, calculate t' .
11. For relative velocity $0.75 c$, transform $x = 700$ m, $t = 4$ μ s.
12. An event occurs at $x = 150$ m, $t = 1.5$ μ s. Find the coordinates in a frame moving at $0.5 c$.
13. If $v = 0.6 c$, $x = 800$ m, $t = 6$ μ s, determine x' and t' .