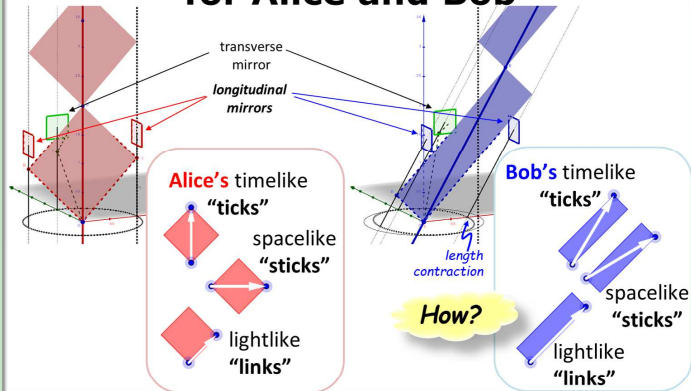


Relativity on Rotated Graph Paper

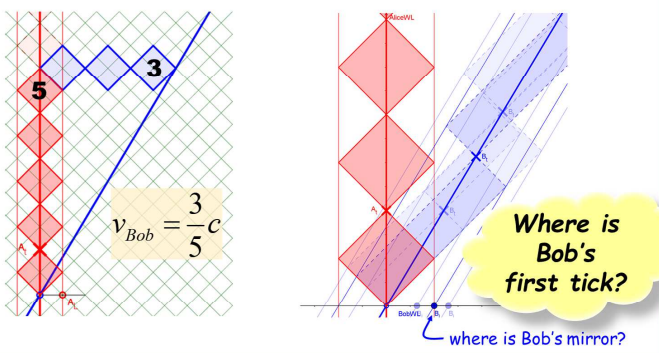
robphy

- Visualizing Time and Space with **"Light Clock Diamonds"** on a Spacetime Diagram drawn on **Rotated Graph Paper**
- Standard Textbook Problems done by **Stacking and Counting Diamonds** and doing simple algebra

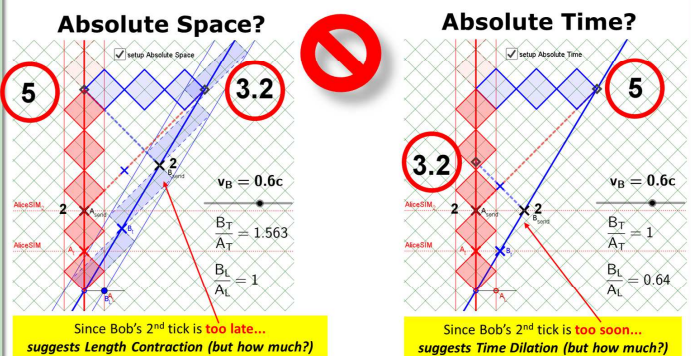
Longitudinal Light Clock Diamonds for Alice and Bob



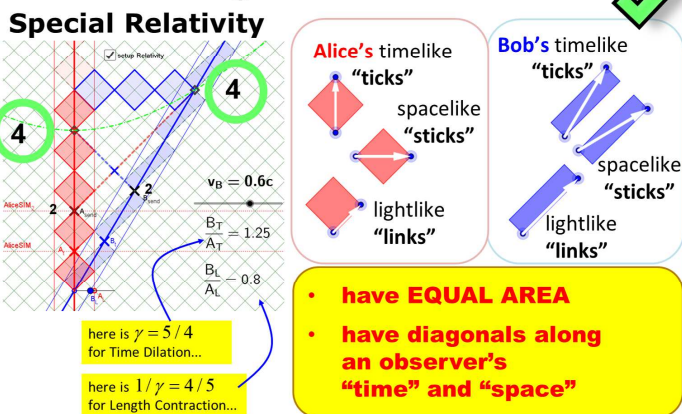
Calibrating Bob's Light Clock according to Relativity?



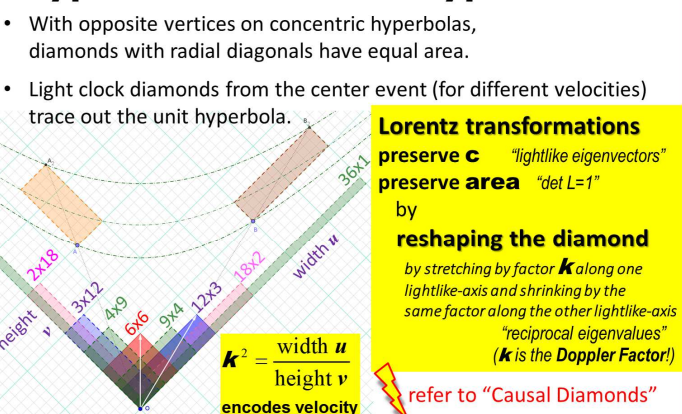
"After 2 ticks, send a light signal to the other." Assuming the Speed of Light is independent of the source and the **Principle of Relativity** (expecting **identical outcomes**) ...



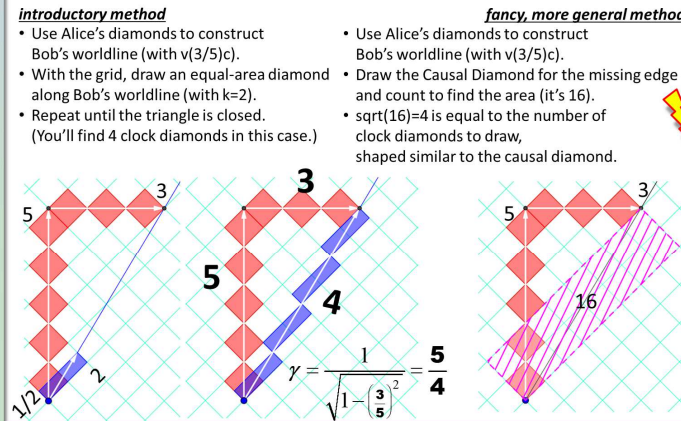
Bob's Light Clock Diamonds



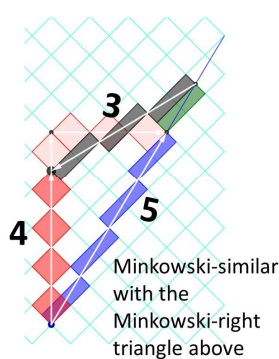
Hyperbolas without Hyperbolas



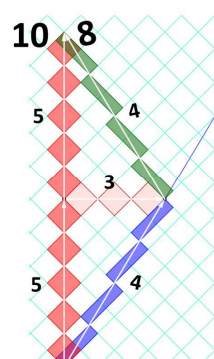
Time Dilation



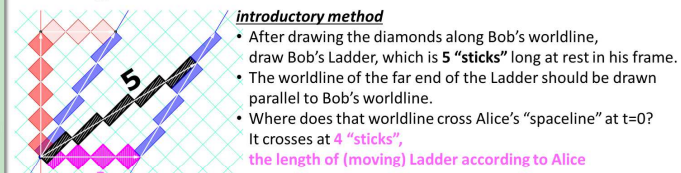
Symmetry of Time Dilation



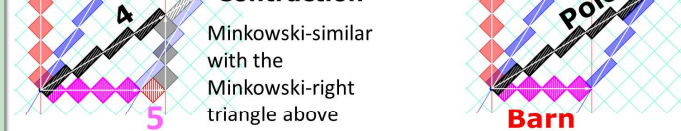
Clock Effect Twin Paradox



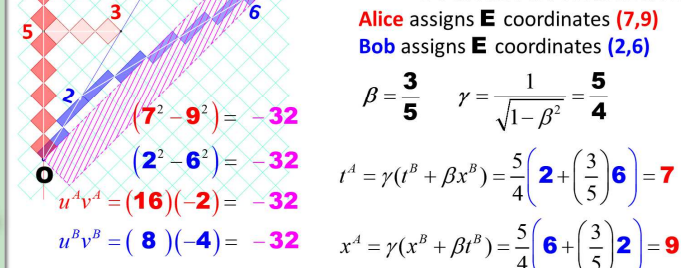
Length Contraction



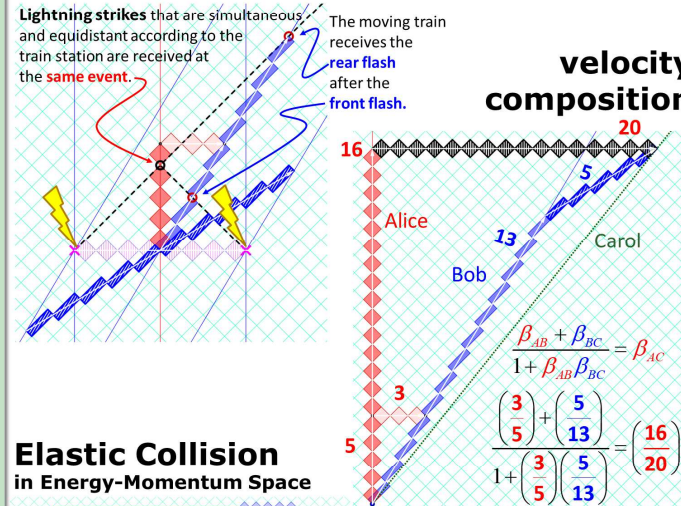
Symmetry of Length Contraction



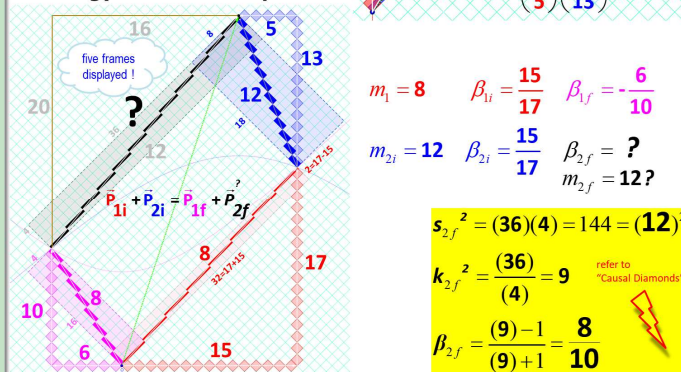
Lorentz Transformation



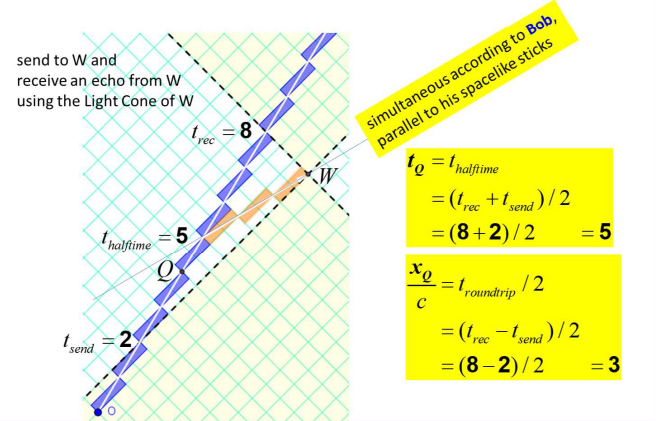
Einstein Train



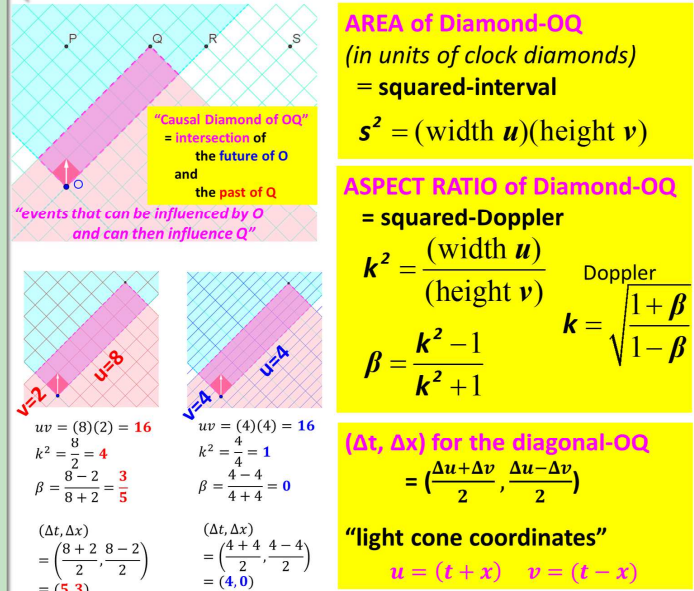
Elastic Collision in Energy-Momentum Space



Radar Method



Causal Diamonds



soon

Readings and Resources

- Salgado, R.B., "Relativity on rotated graph paper", Am. J. Phys. 84, 344 (2016)
- Salgado, R.B., "Visualizing proper-time in Special Relativity", Physics Teacher (Indian Physical Society), 46(4), 132-143 (2004) <http://arxiv.org/abs/physics/0505134>
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- Geroch, R.P., General Relativity from A to B (U. Chicago Press, 1978)
- Taylor, E.F., Wheeler, J.A. Spacetime Physics (W.H. Freeman, 1966)
- <https://www.physicsforums.com/insights/relativity-rotated-graph-paper/>
- <https://www.geogebra.org/m/HYD7hB9v#v>