



The Twin Paradox Revisited: Which Twin is Younger?

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<http://arxiv.org/abs/astro-ph/0606559>



abstract



twins paradox in simply connected space:



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- acceleration required — asymmetrical



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twins paradox in **multiply** connected space:



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- which twin is younger at event B?



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- equal ages: is special relativity wrong?



abstract



twins paradox in simply connected space:

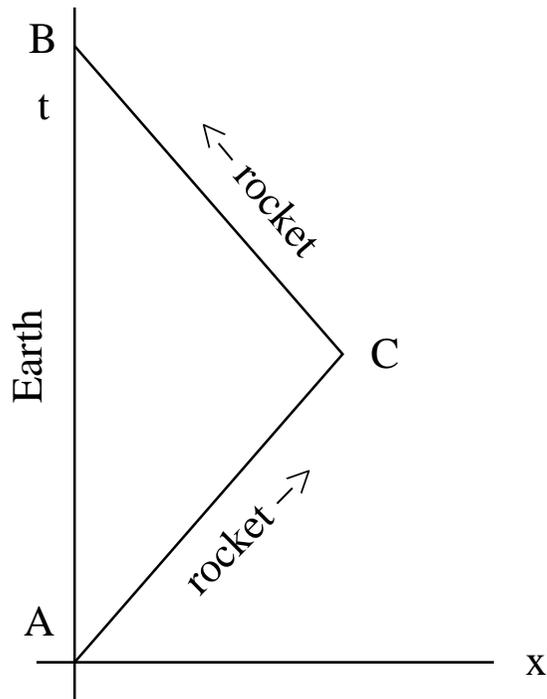
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twins paradox in **multiply** connected space:

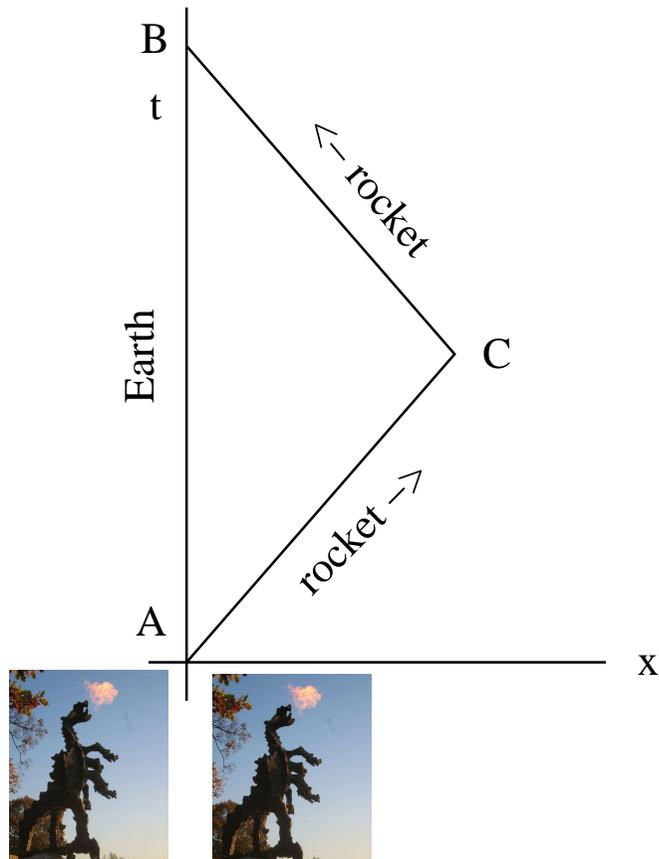
- **no** acceleration
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- equal ages: is special relativity wrong? (no time dilation?)



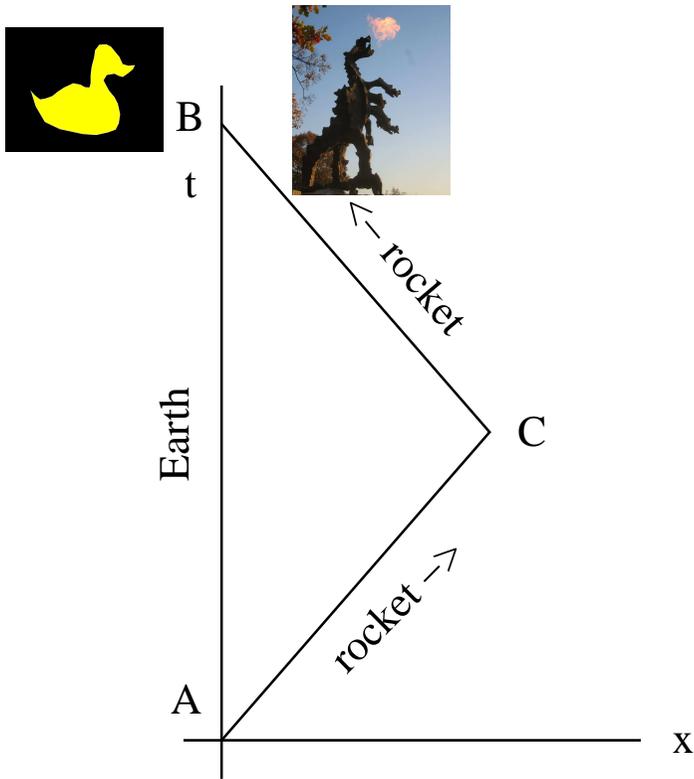
simply connected twin paradox



simply connected twin paradox

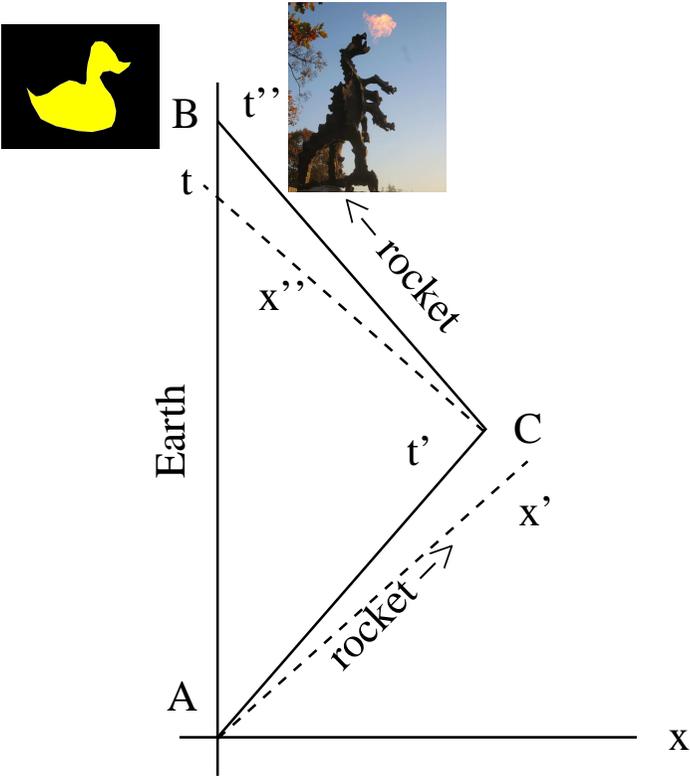


simply connected twin paradox



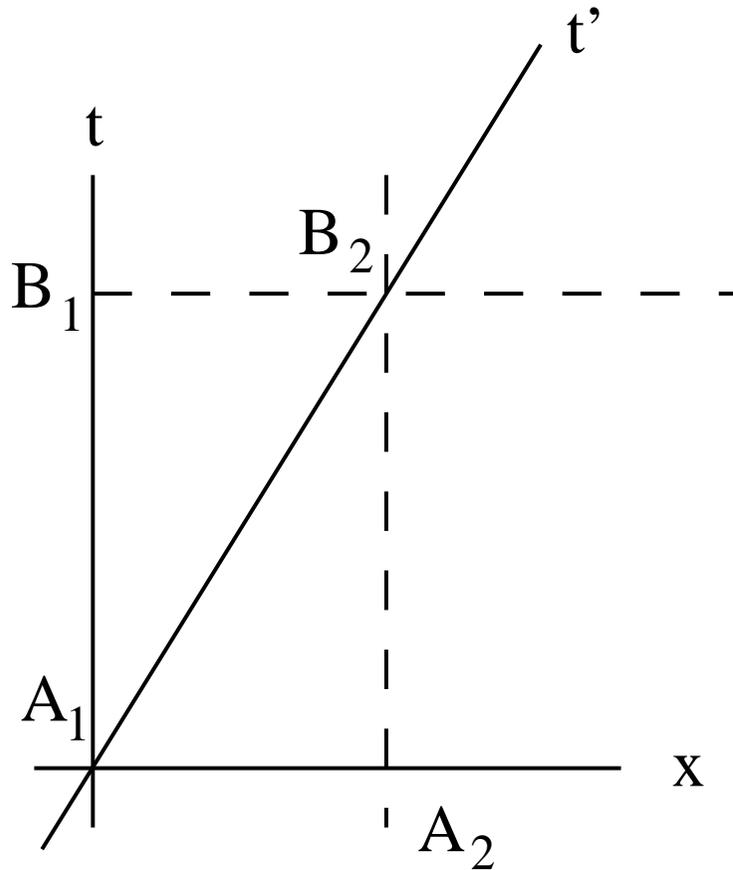


simply connected twin paradox



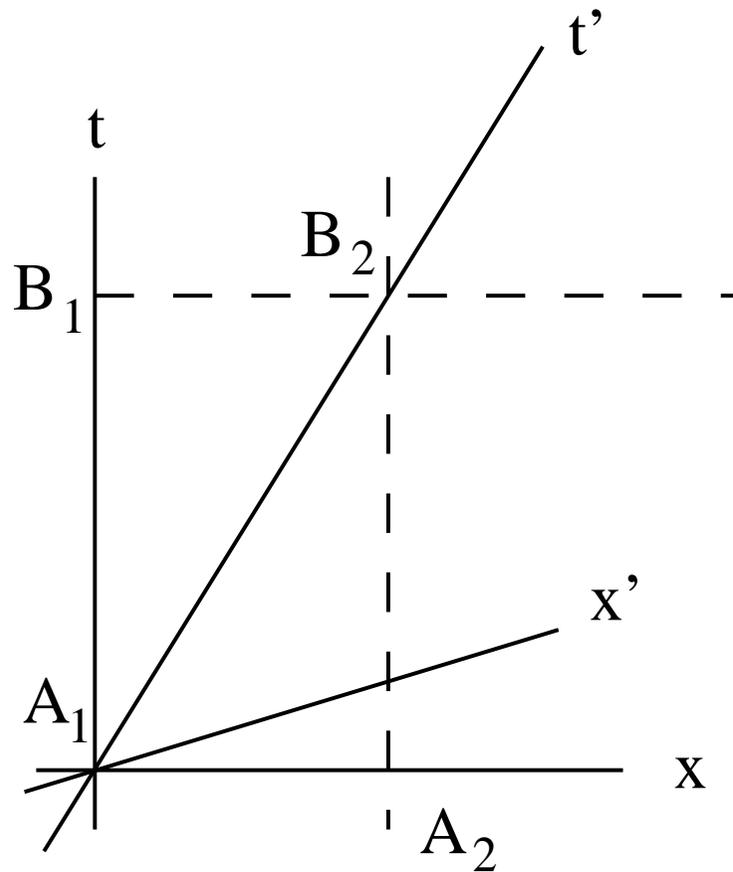


space-time: left-moving twin



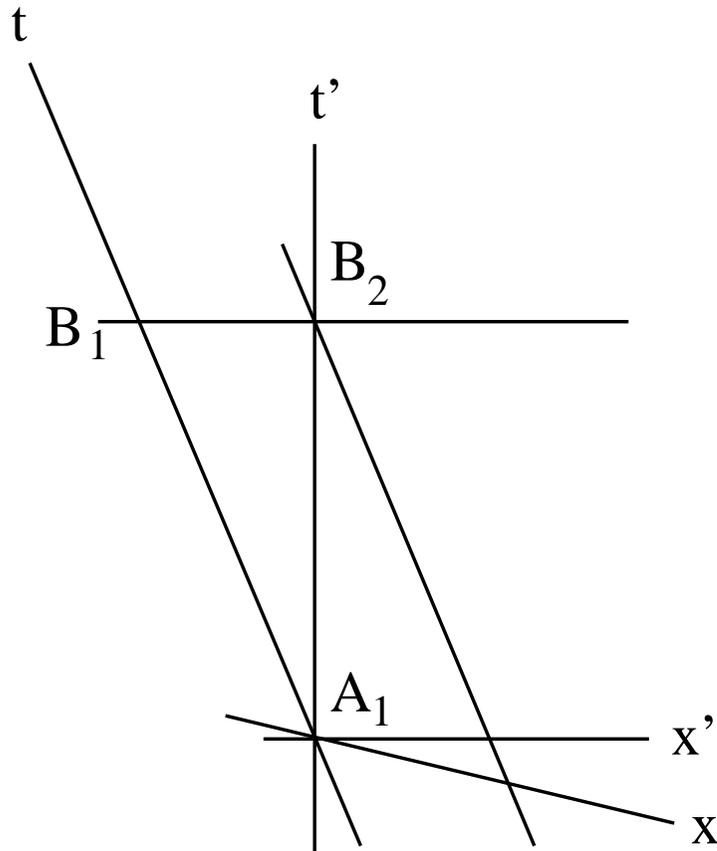


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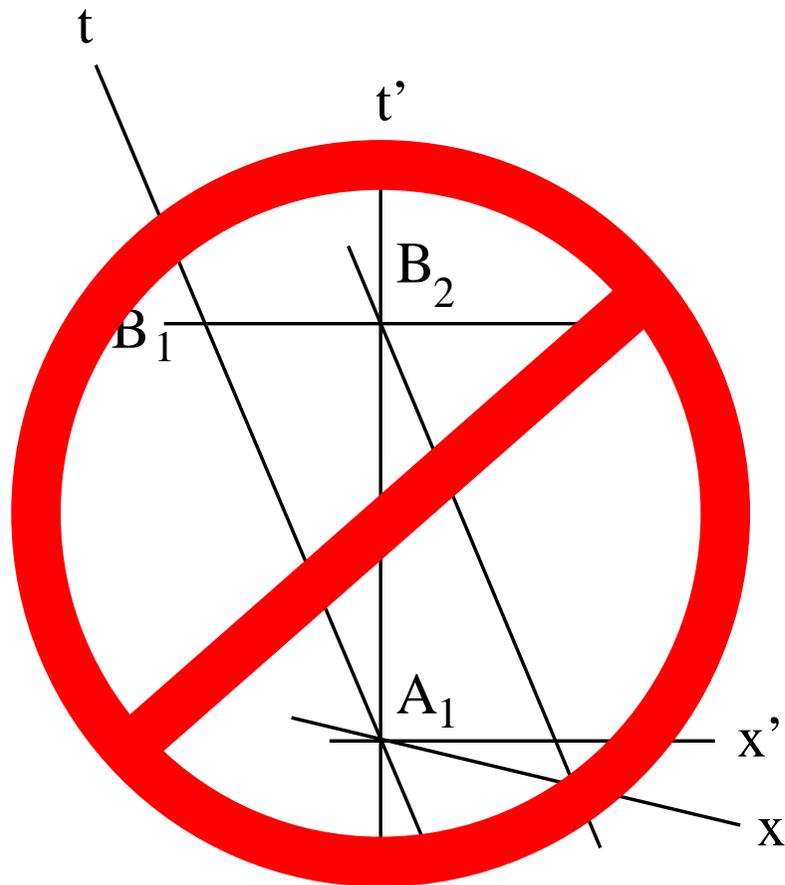


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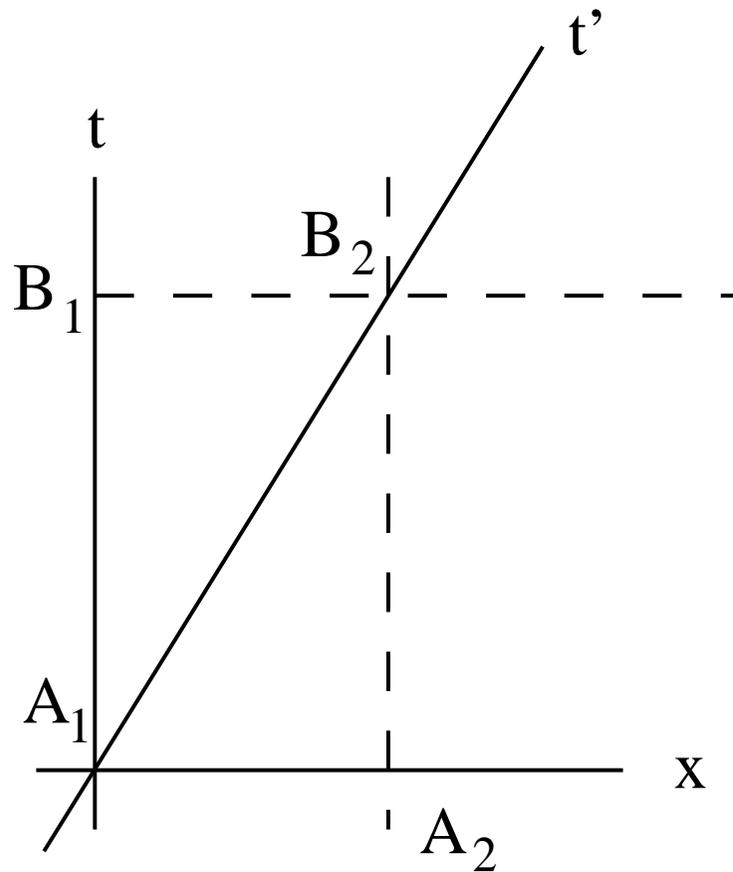


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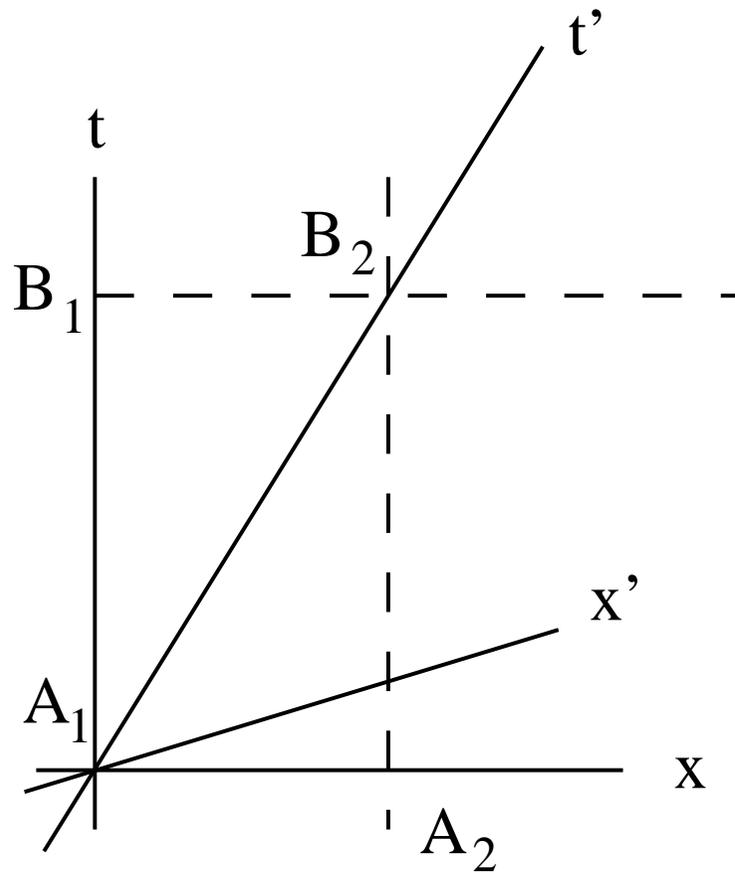


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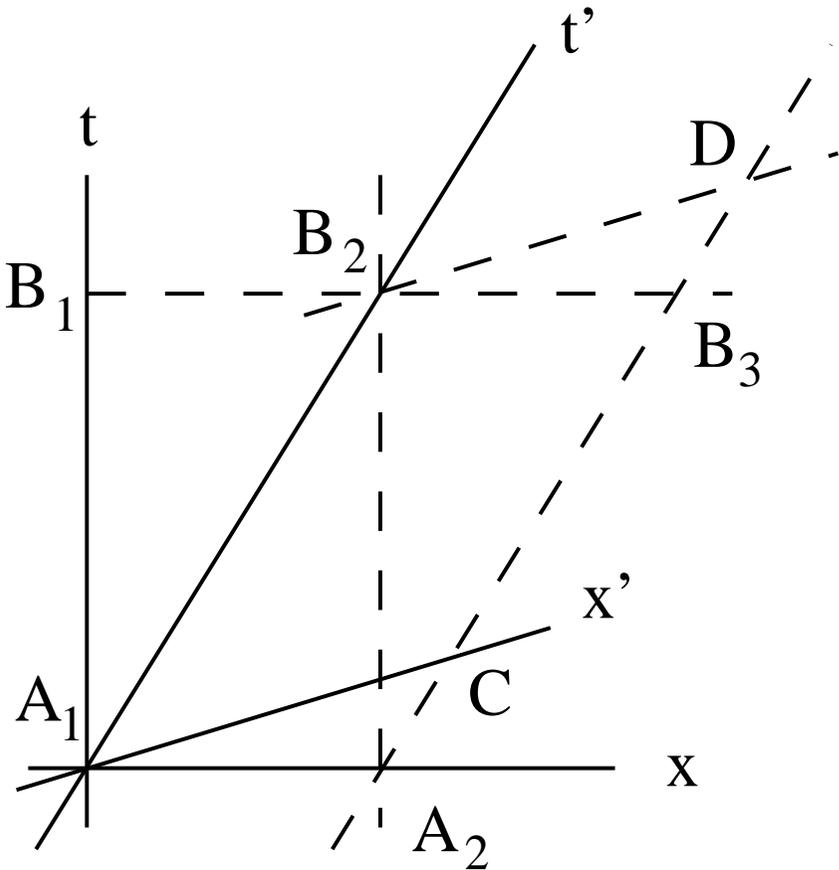


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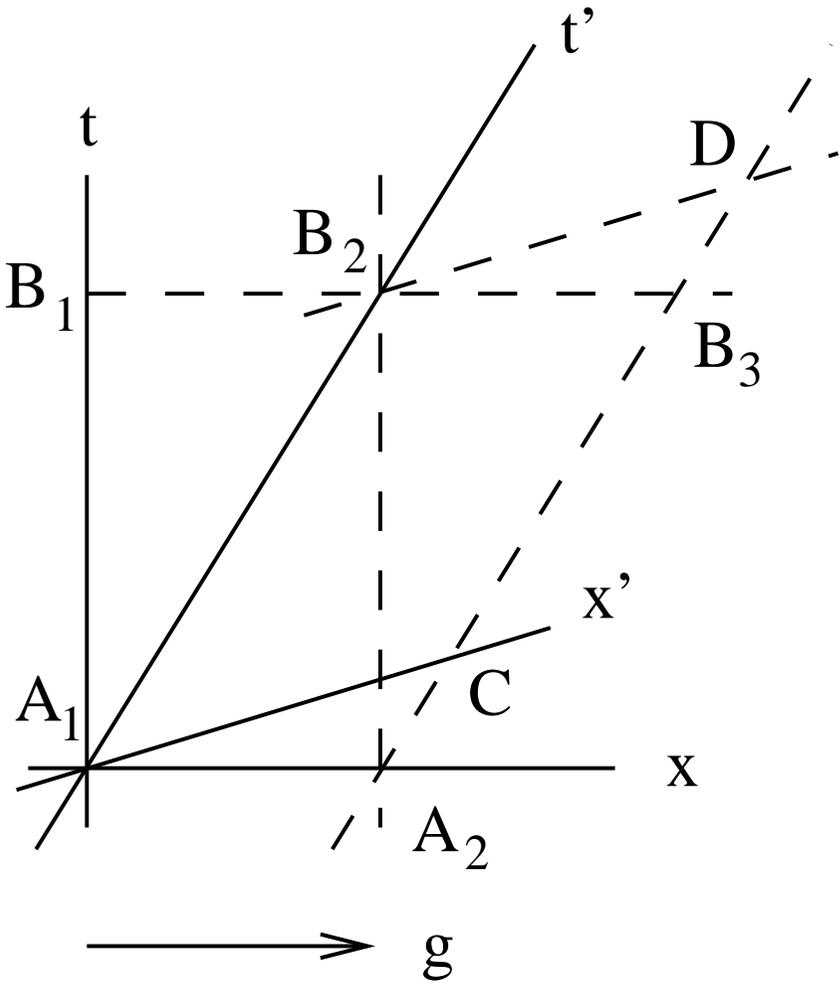


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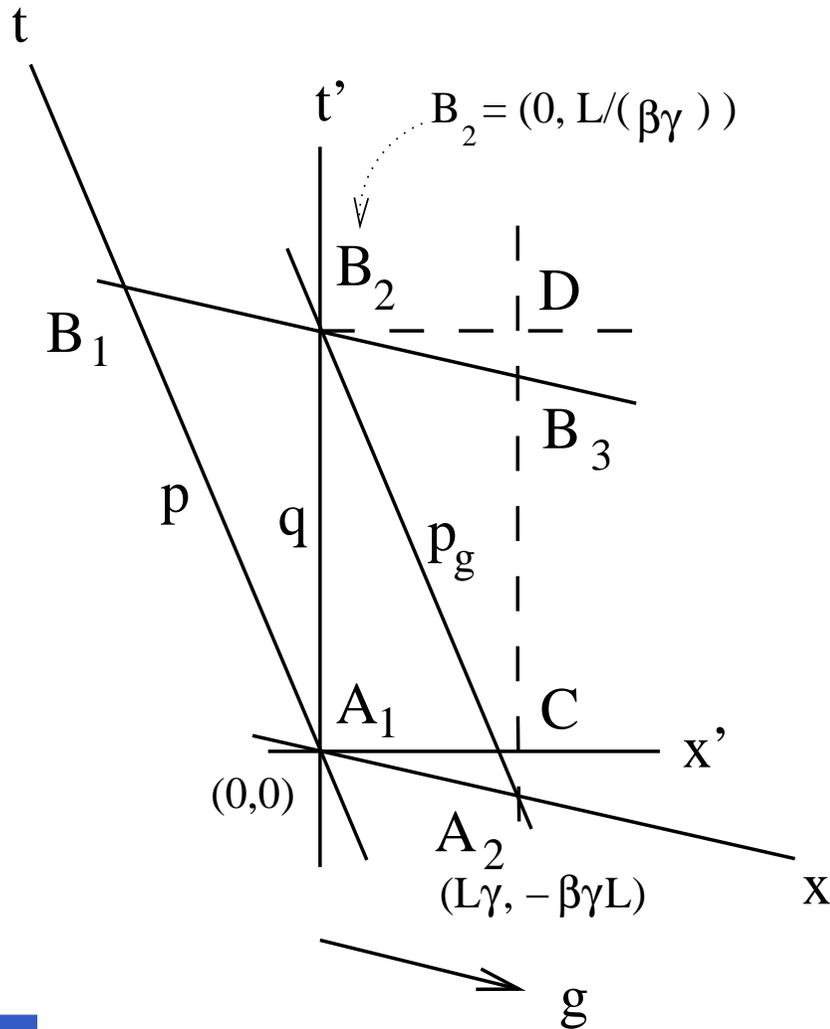


(1)
$$g((x, t)) = (x + L, t)$$





space-time: right-moving twin



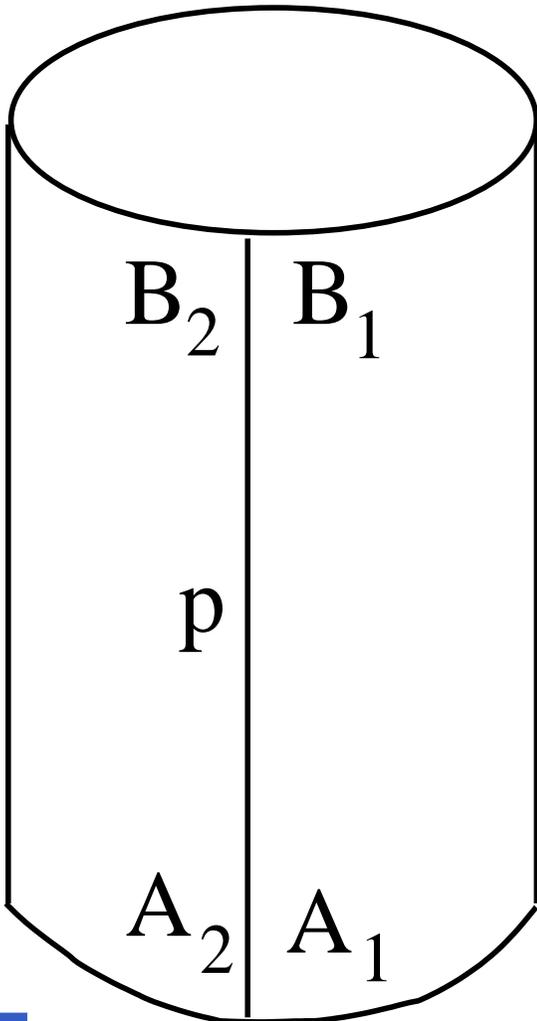
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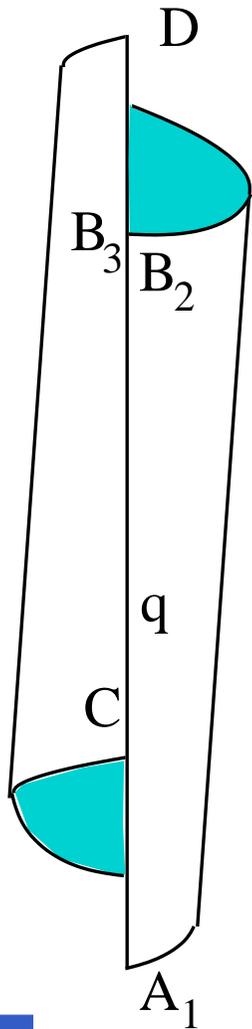
$$(2) \quad g((x', t')) = \left(x' + \gamma L, t - \beta \gamma \frac{L}{c} \right)$$



space-time: left-moving twin

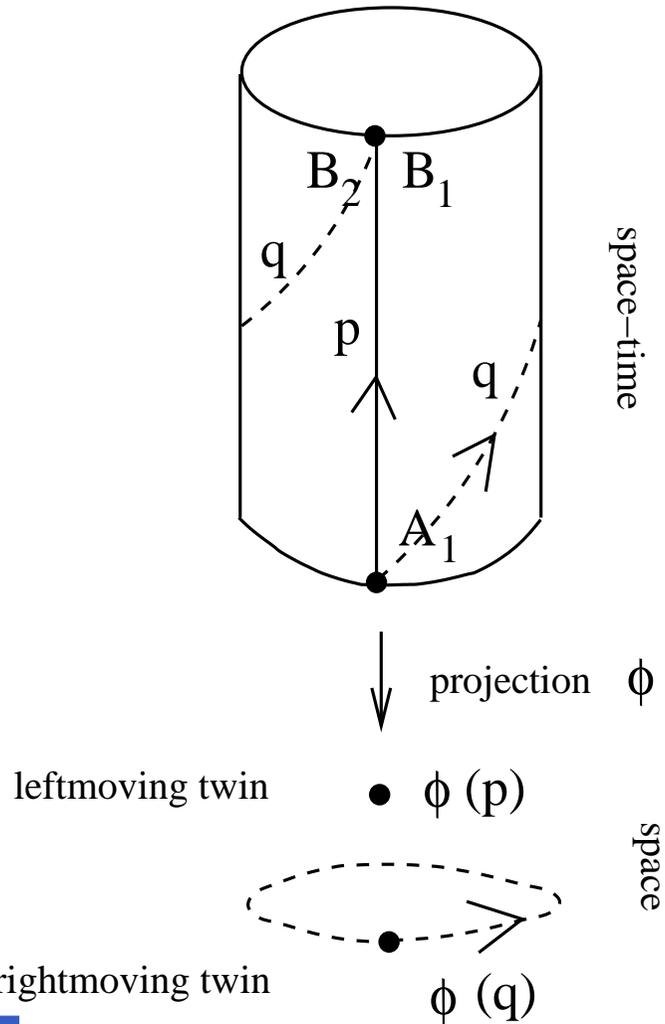


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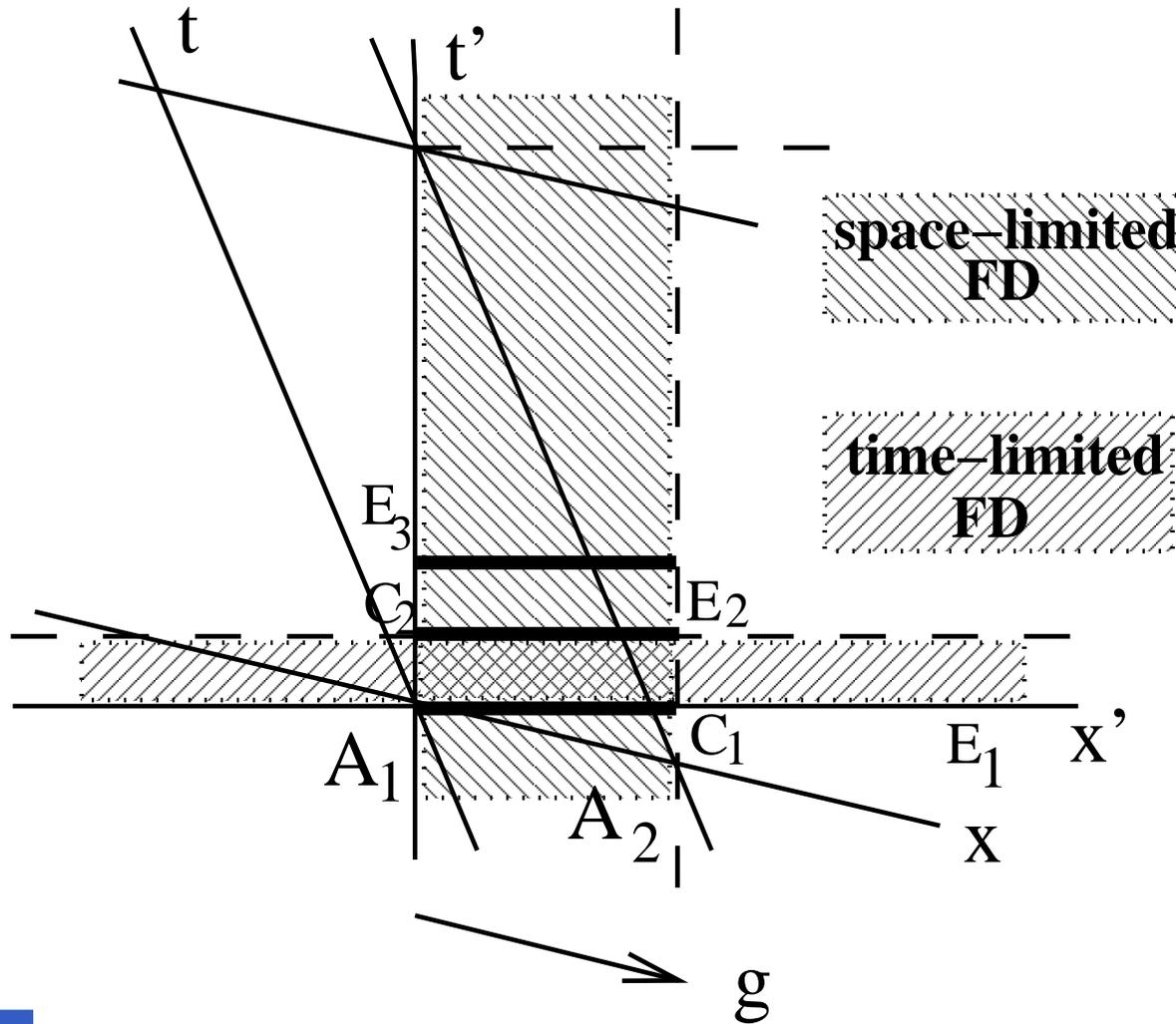


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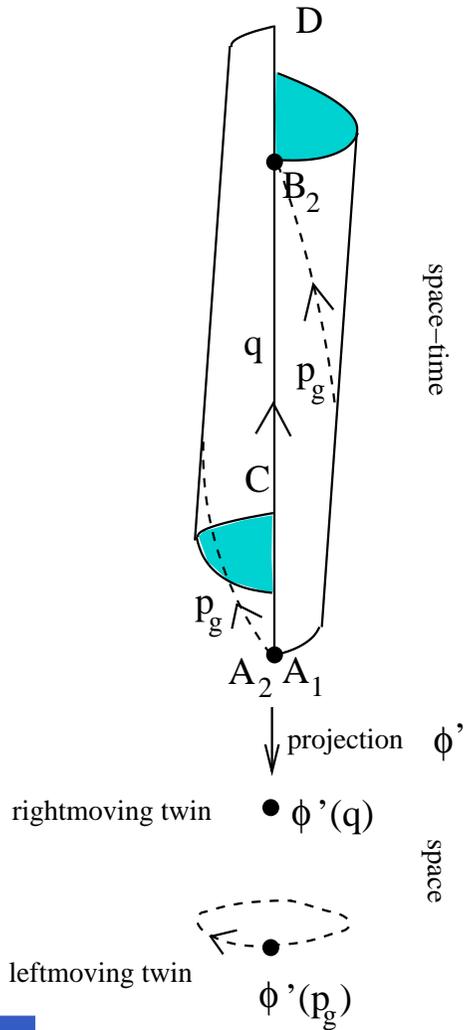


constant time hypersurface





space-time: right-moving twin



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