Switch Beth:D Mihnea:H

Judge View | Tree View | List of Debates | Hide notes | Side: None | Phase: **Make Argument** Remaining: **10:00**

At root

0 Q (H): A train is coasting around a large circular track. It is then switched to a smaller circular track. How does its speed change? Assume no friction.

H: The speed will stay approximately the same. Sometimes a small slowdown might be detectable with the naked eye.

D: It's unclear; modeling the problem in different ways gives different answers; it may slow down or speed

Notes

Q: Is there anything giving the train kinetic energy?

H: No

D: It's unclear (the rotation of the earth might be)

2 Payment: H D None Recurse

Notes

Q: If we consider the earth to be stationary, does one reasonable model suggest the train will slow down?

H: Yes, but the slowdown is small

D: Yes

13 Payment: H D None Recurse

Notes: this is the model based on 'trains always slow down on a curved track, the tighter the curve the more they slow down'

Q: Is the train losing kinetic energy, other than via an increase in its rotational energy?

H: No

D: It's unclear (the rotation of the earth or the effect of the curved track on the wheels might be slowing it down)

5 Payment: H D None Recurse

Notes

Q: If we model the train in its rotating reference frame, does the coreolis effect suggest it speeds up?

H: I think an increase is impossible, except maybe to an insignificant amount

D: Yes

14 Payment: H D None Recurse

Notes: Beth means a detectable, significant effect. Planning to argue something like 'from the train's perspective it's on a rotating surface', and then 'when something's on a rotating surface it's subject to coreolis forces'

Q Is the increase in its rotational energy small, and in many cases not enough to cause visible slowdown?

H Yes

D If the rest of your assumptions are right then this is probably true

6 Payment: H D None Recurse

Notes

Q If the train isn't losing or gaining kinetic energy, except for a small loss due to an increase in rotational energy, does the speed stay approximately the same?

H Yes

D As long as the entropy of its motion is the same then its energy will be conserved and speed will stay approximately the same

7 Payment: H D None Recurse

Notes

Q Do we have a good way to tell which of several reasonable models are the most useful for actually predicting the train's behavior?

H Yes

D No

15 Payment: H D None Recurse

Notes