0 Question: 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.

A1: The speed will stay approximately the same. Sometimes a small slowdown might be detectable with the naked eye.

A2: It's unclear; modeling the problem in different ways gives different answers; it may slow down or speed up

Arguments for A1

2 Question: Is there anything giving the train kinetic energy?

A1: No

A2: It's unclear (the rotation of the earth might be)

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

A1: No

A2: It's unclear (the rotation of the earth or the effect of the curved track on the wheels might be slowing it down)

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

A1: Yes

A2: If the rest of your assumptions are right then this is probably true

7 Question: 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?

A1: Yes

A2: As long as the entropy of its motion is the same then its energy will be conserved and speed will stay approximately the same

Arguments for A2

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

A1: Yes, but the slowdown is small

A2: Yes

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

A1: I think an increase is impossible, except maybe to an insignificant amount

A2: Yes

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

A1: Yes

A2: No