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Fermi Questions, Question 1: Trumpet Spit; Question 2: Tall Buildings

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Question 1: Trumpet spit; Question 2: Tall buildings

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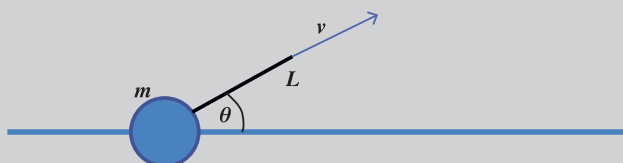
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Physics Challenge for Teachers and Students

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► Just pulling through...

A marble of mass m can slide without friction along a horizontal rod. The marble is being continuously pulled by a light string of length L in such a way that the velocity of the “loose” end of the string is always directed along the string and has a constant magnitude v . What is the magnitude of the force applied to the string at the moment it makes angle θ with the rod?



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- If your name is—for instance—Anthony Scaramucci, please name the file “**Scaramucci17Oct**” (do not include your first initial) when submitting the October 2017 solution.
- The subject line of each message should be the same as the name of the solution file.
- The deadline for submitting the solutions is the last day of the corresponding month.
- Each month, a representative selection of the successful solvers’ names will be published in print and on the web.
- If you have a message for the Column Editor, you may contact him at korsunbo@post.harvard.edu; however, please do not send your solutions to this address.

Many thanks to all contributors and we hope to hear from many more of you in the future!

Note: as always, we would very much appreciate reader-contributed original Challenges.

Boris Korsunsky, Column Editor

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Fermi Questions

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► Question 1: Trumpet spit

How much saliva did Louis Armstrong empty from his trumpet during his career? (*Thanks to Delaney Wright, Olivia Reel and Halina Garraway of my Oklahoma Scholar-Leadership Enrichment Program (OSLEP) class for suggesting the question.*)

► Question 2: Tall buildings

How much do buildings lengthen the day by increasing the Earth’s rotational inertia?

Look for the answers online at tpt.aapt.org. Question suggestions are always welcome! For more Fermi questions and answers, see *Guesstimation 2.0: Solving Today’s Problems on the Back of a Napkin*, by Lawrence Weinstein (Princeton University Press, 2012).

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