

# HOW TO SPILL A CUP OF COFFEE

*A quick look back at a double-prize-winning phenomenon*

*compiled by Stephen Drew, Improbable Research staff*

The common mishap of spilling a cup of coffee, and attempts to understand why it happened, have led to the awarding of two Ig Nobel Prizes. So far.

## Coffee Spills, Going Forward

The 2012 Ig Nobel Prize for Physics was awarded to Rouslan Krechetnikov and Hans Mayer, for studying the dynamics of liquid-sloshing to learn what happens when a person walks while carrying a cup of coffee.

REFERENCE:  
“Walking With Coffee: Why Does It Spill?” Hans C. Mayer and Rouslan Krechetnikov, *Physical Review E*, vol. 85, no. 4, 2012, p. 046117.

## Coffee Spills, Going Backward

The 2017 Ig Nobel Prize for Physics was awarded to Jiwon Han, for studying the dynamics of liquid-sloshing to learn what happens when a person walks backward while carrying a cup of coffee.

That work builds directly on the following study:

“A Study on the Coffee Spilling Phenomena in the Low Impulse Regime,” Jiwon Han, *Achievements in the Life Sciences*, vol. 10, no. 1, 2016, pp. 87-101.

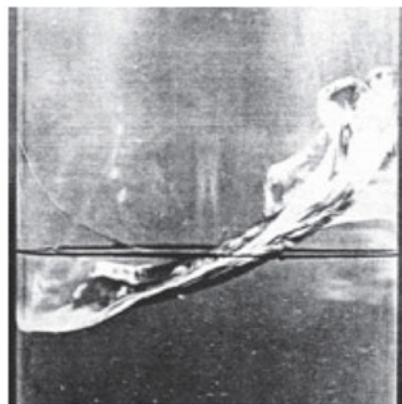
### H. C. MAYER AND R. KRECHETNIKOV



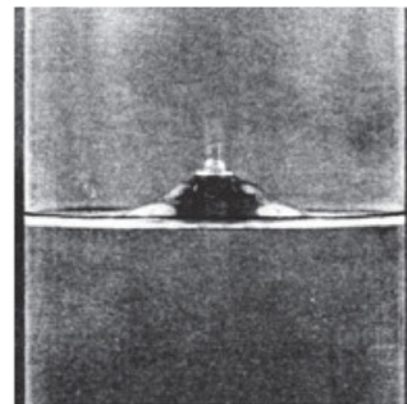
(a)



(b)



(c)



(d)

FIG. 1. (Color online) Coffee spill and key liquid motions in an excited cup. (a) Representative image of coffee spilling. (b) Rotational liquid motion in clockwise direction: top left–top right–bottom left–bottom right. (c) Back-and-forth liquid oscillations (photograph from [1]). (d) Vertical liquid oscillations (photograph from [1]).

*Detail from the prize-winning study by Krechetnikov and Hans Mayer.*

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The features marked with a star (\*) are based entirely on material taken straight from standard research (and other Official and Therefore Always Correct) literature. Many of the other articles are genuine, too, but we don't know which ones.

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There's always new improbable — it's not what you expect! — stuff on the **Improbable Research blog** at [IMPROBABLE.COM](http://IMPROBABLE.COM)

### On the Front Cover

Many coffee beans, and one teabag.



### On the Back Cover

An advertisement for a cremation free lunch, mailed to our office in early 2020. (We have blurred out the contact info.)



## Some Coming Events

See [IMPROBABLE.COM](http://IMPROBABLE.COM) for details of these and other events:

NOTE: The 2020 Ig Nobel EuroTour was scheduled to occur in March and April, but was truncated after the first show, because of the COVID-19 pandemic. The cancelled events will be re-scheduled.

NOTE: Several other events, elsewhere, also will be re-scheduled.

NOTE: Because of the pandemic, we will not do the 2021 Ig Nobel Prize ceremony, and the Ig Informal Lectures, in the usual way. They will be done entirely via the internet, rather than in Sanders Theatre. Please check our web site [WWW.IMPROBABLE.COM](http://WWW.IMPROBABLE.COM) for updates!

September 17, 2020 – 30<sup>th</sup> First Annual Ig Nobel Prize ceremony – WEBCAST

Fall 2020 (Date TBD) – The Ig Informal Lectures – WEBCAST

October 2, 2020 – Gothenburg, Sweden (virtual)

MAR/APR 2021 (pandemic permitting) – Ig Nobel EuroTour

