

# The Wonders of Physics 2021

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### Characters:

Cast	Characters
Clint Sprott	Himself
Pete Weix	
Michael Winokur	
Mike Randall	
Akire Trestrail	
Terry Craney	
Shimon Kolkowitz	

### Premise

Because of Covid-19, we are all sheltering at home, and so we decided to sponsor a contest in which others submit videos showing physics concepts. Awards will be given for the best videos, and they will be edited into an hour-long video to be shown around the world.

## Resources:

- [2018 PowerPoint Slide Show](#) (where is the 2019 version?)
- [Physics Lecture Demonstrations](#)
- [+An old Physics 103 Demo List](#)
- [An old Physics 104 Demo List](#)
- [WoP Demos from Previous Years](#)
- [85 Video Clips from Physics Demonstrations Book](#)
- [WOP sound library](#)
- [2020 WOP script](#)
- [2019 WOP script](#)
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- [2013 WOP script](#)
- [2012 WOP script](#)
- [2011 WOP script](#)
- [Free Sound Effects Archive](#)

# The Wonders of Physics 2021

## “Physics at Home”

### [Annual show intro with music](#)

(Replace "2020 Physics of Time" with "2021 Physics at Home" over a suitable graphic.)

**Peter:** <https://drive.google.com/file/d/1HZBkKfHqam-bLkYrlaxiOwEwieKUBKOf>

**Sprott:** <https://drive.google.com/open?id=1rwkifZfkb4mpgStmc90zj9WDKjuZ37OH>

**Peter:** That sounds like a great idea, but some people may need a bit more help and advice. Let's ask Mike Randall to provide some further guidance...

**Mike:** <https://drive.google.com/open?id=1vqWKz1t6GxMi193zlf17YPgqrdAJc3X4>

(See my [recorded video](#))

**Sprott:** Thanks, Mike. That should get people working. While we're waiting for our first submission, let me show you this short video from my friend and colleague Bassam Shakhashiri congratulating us on the 38th season of The Wonders of Physics...

### **Bassam Shakhashiri:**

[https://drive.google.com/file/d/12mRTune\\_0TBgHHSYjffh8ns5ydtlycRf/view?usp=sharing](https://drive.google.com/file/d/12mRTune_0TBgHHSYjffh8ns5ydtlycRf/view?usp=sharing)

**Sprott:** Yes, it was Bassam Shakhashiri who inspired The Wonders of Physics with his own Science is Fun program, and we've done many joint presentations over the years.

### **July, 2021... (graphic)**

**Sprott:** And now we've received 46 videos from around the world. Our nine judges have submitted their scores, and we're ready to announce the winners. All the winners will receive a plaque with their names on it, and they'll be able to choose from a list of ten prizes. The first place winner will be announced at the end of this video, and so stay tuned.

**Sprott:** Meanwhile, the award for the best video about the Physics of Motion goes to Arnav Bali, a 13-year old middle schooler from Connecticut. He shows how to find and use the center of mass. See if you notice a slight error in one of his formulas...

### **37 Arnav Bali (Best Video about the Physics of Motion - Understanding Center of Mass):**

<https://drive.google.com/open?id=1jnk8KlvxJ3mU5j3vdywPT-Bk4QFhFtIR>

**Sprott:** Here's another video about the Physics of Motion by a brother/sister team from Wisconsin and winner of the best middle school entry...

**19 Jack and Maddie Ancelet (Best Middle School Entry - Newton's Laws of Motion):**

<https://drive.google.com/open?id=1LPKWqJhTUZr42mMlhVnfnPvAfmXAD6JY>

**Sprott:** The winner of the award for the best video from someone over the age of 50 goes to David Blough from our own University of Wisconsin - Madison for his experiments with the trebuchet...

**41 David Blough (Best Video from Someone Over the Age of 50 - Trebuchet):**

<https://drive.google.com/open?id=1VqjoRoU9ee6qjToLsl2eZW9iqblk9PY6>

**Sprott:** At the other extreme is our youngest award winner, 8-year-old Rowan Evenson from Wisconsin. He shows us how levers work. He sent us a five and a half-minute video, but here's a 30-second clip from his submission (3:40 - 4:10)...

**6 Rowan Evenson (Best Video from Someone Under the Age of 10 - How can Rowan pick his Papa up with one Finger?):**

[https://drive.google.com/open?id=1FmW51glfWs6H0TvD6oDHQrIGKn\\_h11jS](https://drive.google.com/open?id=1FmW51glfWs6H0TvD6oDHQrIGKn_h11jS)

**Sprott:** The next video is from a California high school student who received the award for the best video about the Physics of Oscillations...

**45 Simon Cha (Best Video about the Physics of Oscillations - All About Pendulums!):**

<https://drive.google.com/open?id=1vNqpp4VtTHTR6ljjimGo46bCuByXI7hB4>

**Sprott:** On the same topic, the following video from a group of East Troy, Wisconsin high school students received a \$200 cash award from the United States Metric Association for the best use of the metric system...

**27 Summer Chapman, Ava Joas, and Brady Fisher - East Troy (WI) High School (Best Video using the Metric System - Energy in Action):**

<https://drive.google.com/open?id=19ofkArHFRtn5YFSbpOkdsINj2SpDQ886>

**Sprott:** The winner of the award for the best Rube Goldberg Machine was Trey Wilson, a high school student from Florida. Her video included a long written explanation of the physics principles that we omitted in the interest of time (stop at 0:21)...

**8 Trey Wilson (Best Rube Goldberg Project - Rube Goldberg Project):**

[https://drive.google.com/open?id=1o7b\\_tut66bwlqjNtroJ6WRhbL5G0ibPg](https://drive.google.com/open?id=1o7b_tut66bwlqjNtroJ6WRhbL5G0ibPg)

**Sprott:** And our final award winning video about the Physics of Motion came from a California high school student. It gives an explanation of the physics required for a journey to Pluto...

**46 Dimple Amitha Garuadapuri (Best Video about the Physics of Space Travel - A Timely Exploration: Traveling to Pluto):**

<https://drive.google.com/open?id=1nK1l-0NJD206s3ANFS7kxEtPChf-oECf>

**Sprott:** Now, a bit closer to the Earth, the next video from a high school student in Bangladesh won the award for the best video on the Physics of Airplane Flight...

**42 Asif Touhid (Best Video about the Physics of Flight - Physics Behind the Flight of an Airplane):**

[https://drive.google.com/open?id=1-yIUGNsCUvn4QbxQP96edwvKr\\_lzDdbr](https://drive.google.com/open?id=1-yIUGNsCUvn4QbxQP96edwvKr_lzDdbr)

**Sprott:** We had a number of nice videos about the Physics of Sound. This next submission, from students at East Troy Wisconsin High School on the Doppler Effect won the award for the best Physics of Sound video...

**24 Andrea Smith, Addie Hart, Kayla Stroh, and Thayne Schmitt - East Troy (WI) High School (Best Video about the Physics of Sound - Doppler Effect):**

[https://drive.google.com/open?id=1\\_rFOfvz2eNdmjbKarjCg3fDQOjiU2D-H](https://drive.google.com/open?id=1_rFOfvz2eNdmjbKarjCg3fDQOjiU2D-H)

**Sprott:** And from another high school in Neenah, Wisconsin, this group won the award for the best video about the Physics of Waves (shorten the music at the end)...

**12 Ellie Balensiefen, Trinity Grimes, and Ainsley Moore - Neenah (WI) High School (Best Video about the Physics of Waves - Rubens Tube):**

<https://drive.google.com/open?id=1zV1q0XbvNWRvctVw4i-CRYGg698kzsGo>

**Sprott:** And our last video about sound is from Northeast Wisconsin Technical College. It won the award for the Best Capstone Project (trim music at the beginning and end, 0:20 - 2:45)...

**22 Paige Hyden and Madelyn Krawze - Northeast Wisconsin Technical College (Best Capstone Project - Waves through Fire - the Pyro Table):**

<https://drive.google.com/open?id=1TFAYyFpMRzm2MXf6C97bWXAVee371kqr>

**Sprott:** We had only had two submissions on electricity, and they both won awards. The first was from a group of high school physics students from Neenah, Wisconsin. It was the best video on the Physics of Electricity...

**11 Lindsay Manteufel, Laura Salman, and Sydney Wirth - Neenah (WI) High School (Best Video about the Physics of Electricity - Electrostatic Levitation):**

<https://drive.google.com/open?id=1vYEKGKA5j3Z94WWu0nCD68UHXQCQja1b>

**Sprott:** The second electricity video from a high school student came all the way from India. It won the award for the best video about the Physics of Lightning...

**36 Vanshika Somani (Best Video about the Physics of Lightning - The Formation of Lightning!):**

<https://drive.google.com/open?id=1LsNdbISGeKoBS9lqaFIXho01a8u4Yswx>

**Sprott:** We had several nice videos about the Physics of Light, two of which, both from East Troy, Wisconsin High School students, won awards. The best video about the Physics of Light was on Newton's Rainbow...

**30 Callie Nelson and Morgan Sonderegger - East Troy (WI) High School (Best Video about the Physics of Light - Newton's Rainbow):**

<https://drive.google.com/open?id=1x-tffGZU6eqOY48WHePtIYmhxhZOJEMf>

**Sprott:** The second video about light from East Troy, Wisconsin High School was given the award for the best video from our home State of Wisconsin...

**25 Sarah Scanlan, Robert Thomas, and Mary Schrieber - East Troy (WI) High School (Best Video from Someone in Wisconsin - Lasers, Gelatin, and Refraction):**

<https://drive.google.com/open?id=1TUji5kTOp7HmQRy6DOra-cxVozrpscZH>

**Sprott:** We had very few videos about modern physics, by which we mean things that have been discovered in the last hundred years or so. But here's a slightly technical one on Wormholes and Time Machines from a high school student in Azerbaijan. It won the award for the best Modern Physics video...

**38 Khadija Balakishiyeva (Best Video about Modern Physics - Wormholes & Time Machines):**

[https://drive.google.com/open?id=18f\\_3bOezdijwuhKz4ECtwydzMnOpZhh5](https://drive.google.com/open?id=18f_3bOezdijwuhKz4ECtwydzMnOpZhh5)

**Sprott:** And now we're ready to announce the first place winner of the 2021 Wonders of Physics Video Contest. That award goes to Alex Lie, a 16-year-old high school student from California for his video on The Rotational World...

**2 Alex Lie (First Place Winner - The Rotational World):**

<https://drive.google.com/open?id=1iiiQA-Vtm1VGDMhrPIhN66PRHxgffUoK>

**Sprott:** Congratulations Alex! You'd make a great teacher and a great physicist, not to mention a pretty good soccer player.

**Sprott:** We also have an award of a \$200 gift certificate from PASCO for the teacher whose students sent us the most high-quality videos. That award goes to Kristin Michalski from the East Troy, Wisconsin High School. Congratulations Kristin and to all your talented students!

(Insert a photo of [Kristin Michalski](#))

Kristin Michalski, NBCT

East Troy High School

Science Team Leader

**Sprott:** Now there were many other excellent videos, but we had to limit the awards to the best of the best. I want to thank everyone who submitted a video to the contest.

**Sprott:** We started this contest to continue the 38-year tradition of presentations of The Wonders of Physics. But covid-19 prevented us from having a live show this year. However, we hope to return to live shows next February.

**Sprott:** The contest was a great success and an excellent learning experience for the many students and others who submitted videos. So we plan to repeat the contest next year. Look for an announcement in January, and join the fun by submitting a video of your own.

**Sprott:** I hope you've enjoyed this 328th presentation of The Wonders of Physics. And with that, I thank you all for watching!

(fade to credits with theme music - can you make me disappear in a cloud?)

Credits:

Executive Producer and Host  
Professor Clint Sprott

Coordinator  
Peter Weix

Judges  
Quent Cassen  
Mallory Conlon  
Terry Craney  
Aedan Gardill  
Steve Narf  
Mike Randall  
Clint Sprott  
Peter Weix  
Michael Winokur

Theme Music  
Jim Latimer  
Frank Ferriano

Editor  
Sarah Perdue

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University of Wisconsin - Madison  
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## Judging:

The judging for each video was on a 0-10 scale, 0-2 for each of the five criteria at <https://docs.google.com/document/d/1sgapye-sFPyl5bhRcHiaw9OOeq-flzGry-Nr81I4Gwc/edit?usp=sharing> or using other appropriate criteria.

The results of the judging and award winners are at <https://bit.ly/TWOPscores>