The Wonders of Physics 2018

*“35th Season Celebration”*

# *Opening*

**Norman (on video):** This is Norman Gilliland of Wisconsin Public Radio. This past year, we at WPR have been celebrating the first regularly scheduled radio broadcasts which took place in 1917 from the Physics building on the University of Wisconsin campus. In honor of that and to celebrate the 35th anniversary of **The Wonders of Physics**, Professor Sprott and his crew will be broadcasting their own show from the basement of the Physics building. Let’s see what exciting things they have planned for us…

 ***{Illuminate the ON AIR sign and turn on lights}***

**Peter:** And now from the basement of the Physics building at the University of Wisconsin, we present the 35th Anniversary Show of The Wonders Physics. Professor Sprott is just arriving…

***Audio:*** [***Motorcycle sound***](http://static1.grsites.com/archive/sounds/vehicle/vehicle146.wav)

**Peter:** And now he’s opening the door!

**Peter:** And now he’s walking into the building!

***{Sprott walks out casually, clad in a tuxedo and patiently waits for the theme music to end}***

**Sprott: Welcome to *The Wonders of Physics*! We are pleased to bring you this live radio broadcast using a replica of the original 9XM radio transmitter. We’ll be presenting some of the best physics demonstrations from the past 35 years as well as a few new ones. Our studio audience will be voting with their applause for their favorite demonstrations.**

 **And now a word from our sponsor…**

# *Motion (Mike Randall)*

**Peter:** Is your old doghouse too slow? Can’t keep up with that pesky Red Baron? Well, now, the sky’s the limit in the 1917 Sopwith Camel! An agile, highly maneuverable biplane, the Sopwith Camel accounted for more aerial victories than any other Allied aircraft during World War I. And, unlike your doghouse, it can actually FLY! Test drive the Sopwith Camel today!

***Audio:*** The Sopwith Camel is noted for its tendency to crash. Side effects include: vicious spin characteristics; engine choking and cutting out during takeoff; crashing on takeoff due to the full fuel tank affecting the center of gravity; tail-heaviness in level flight; immediate uncontrolled spinning in a stall; and sudden right turns due to engine torque. Your results may vary.

**Sprott: Mr. Weix, air travel has come a long way since 1917. In fact, our first show today is “Let’s Fly!” with your host, Captain R. O. Dynamic…**

**Mike R:** Cheerio, everyone! Welcome to “Let's Fly!” My name is Captain R. O. Dynamic…

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***Demo: { Toilet paper gun }***

**Mike R:** Yes! The air pressure was lower on top of the toilet paper. So the higher pressure air under the paper lifted it up, and sailed it out into the room! Everyone, quickly wad up the TP and pass it down to the stage.

**Sprott: And now let’s vote with your applause for your favorite Motion demonstration:**

1. **Paper airplane**
2. **Magdeburg plates**
3. **Hovercraft**
4. **Bernoulli ball levitation**
5. **Toilet paper gun**

**Mike R:** That’s all for me today. Next time on “Let’s Fly!” we’ll talk about Robert Goddard and his controversial idea about sending rockets to the moon!

# *Heat (Terry Craney)*

**Peter:** Tired of high energy bills during this long cold winter? Well look to a new company for the answer- Sular Fusion Mining Company. No, we aren’t talking about harnessing the sun’s infrared radiation here on earth. We are going to the sun and bringing part of it back. And with your investment we can’t fail. Sure there are few technical problems, but we will be going at night when the sun is not shining. So far there has been a “massive reaction” to our IPO (SUMI). Invest now.

***Audio:*** Past performance of Solar Fusion Mining Company stock does not guarantee future returns.

**Sprott: And now to get our energy going at the atomic scale and to “warm us up”, we have that famous English physicist Calvin Scale who at times is an absolute zero....**

**Terry:** What did you just call me? I’ll take that as a compliment…

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**Gas on**

**Fire extinguisher**

**Gas off**

**------------------------------------------------------------**

***Demo: { Exploding balloons }***

**Terry:** So that’s all for today's demonstrations on heat. Be sure to tune in next time when we will not only be burning and blowing things up by chemical means, but also creating a small nuclear fission reaction. I can hardly wait. So in a few moments, I am going to act like an atom and split.

**Sprott: And now let’s vote with your applause for your favorite Heat demo:**

1. **Boiling in a Paper Cup**
2. **Non-burning Handkerchief**
3. **Fire Tornado**
4. **Freezing by Evaporation**
5. **Exploding Balloons**

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# *Sound (Emily Ehlerding)*

**Peter:** Do you want to take your music with you wherever you go? Well now with the Pauli Portable Player you can. Weighing in at only 30 pounds, our record player lets you be the life of any party. Pauli - a proud sponsor of “Sound Off” with Rileigh

**Sprott: Now here to break up the talk radio with some sound waves of her own, it’s “Sound Off” with Rileigh Rayleigh…**

**Emily:** Well hello folks. I’m Rileigh Rayleigh and you’re listening to Sound Off…

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***Demo: { Breaking a beaker with sound }***

**Emily:** Well that’s all the time we have for today, folks. Thanks again for listening to Sound Off, and come back next week, when we will be featuring more fantastically ridiculous music and fantastically fantastic science.

**Sprott: And now let’s vote with your applause for your favorite Sound demonstration:**

1. **Breathing He and SF6**
2. **Flame Pipe**
3. **Hoot Tube**
4. **Breaking a Beaker with Sound**

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# *Electricity (Michael Winokur)*

**Sprott: And now to get some spark out of your radio, we have our very own duo of electrifying hijinxs, Sparky and his sidekick Mr. E…**

**Mr. E:** Whoa there partner…

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***Demo: { Exploding Foil }***

**Mr. E:** At last we’ve finally managed to get rid of that nasty electrical charge we’ve been storing. Everyone should be positively ex-static!

**Sprott: And now let’s vote with your applause for your favorite Electricity demonstration:**

1. **Electrical Forces on the Plastic Rods**
2. **Jacob’s Ladder**
3. **Faraday Train**
4. **Tesla Coil and Faraday Cage**
5. **Light Bulb in the Microwave**
6. **Exploding Foil**

**Mr. E:** Hi Ho Silver away…

# *Magnetism (Ryan Norval)*

**Sprott: Our next radio program will be a reading of Sherlock Ohm’s by our guest and his assistant Dr. Watts-On…**

**Ryan:** Welcome back folks to another episode of Sherlock Ohm’s Magnetic Mysteries…

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**Hard Hat**

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***Demo: { Magnetic Guillotine }***

**Ryan:**  That's all for this week folks. Will Sherlock Ohms and Watts-On, catch the Ne-ferrious Prof. Magnetsen? Tune in next week for the shocking conclusion of Sherlock Ohms: A Brilliant Induction!

**Sprott: And now let’s vote with your applause for your favorite Magnetism demonstration:**

1. **Ring Launcher**
2. **Levitated Ball**
3. **Induction Heater**
4. **Magnetic Guillotine**

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# *Light (Kimberly Palladino)*

**Peter:** Hi folks, is that gravitational force getting you down. Well then, make a motion over to Newton's for some of the best rings in the universe. Don't confuse them with someone else's dark and tasteless corpuscular theories. These rings are light, light as can be. Remember it well listeners, Newton's rings run circles around the competition.

**Kimberly:** Hello Prof. Sprott. I’m in a few minutes early for my program. Can I tell you about my new passion for painting? It’s too bad I can’t share it over the radio-waves.

**Sprott: Actually, we’re already on the air… And now it’s Late Night Lights with Dr. Sunshine Maxwell. For those of you still awake, she’ll help you see in the dark…**

**Kimberly:** Hello my late night nightlights…

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**9XM filaments 🡪 1.8 Amperes**

**9XM HV on**

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***Demo: { IR Camera )***

**Kimberly:** So join me next time for our next light wave adventure.

**Sprott: And now let’s vote with your applause for your favorite Light demonstration:**

1. **Fluorescence demos**
2. **Popping the Balloons with a laser**
3. **IR Camera**

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*Closing (Sprott, Cast)*

**Sprott: Now, Peter, which demonstration got the greatest applause from the entire show?**

**Peter:** And the winner is… (your choice)

**Sprott: Some of you may be thinking that we are just pretending to broadcast this show, but if you have a portable radio, tune it to 550 kHz at the bottom of the AM dial, and you should be able to hear us. *{Hand portable radio to Peter and pick up telephone}* … Can you hear me now? Mr. Weix, come here, I want to see you. This is radio station 9XM broadcasting from the basement of the Physics building on the University of Wisconsin campus 100 years after the first radio broadcasts were made from here.**

**Sprott: When I started The Wonders of Physics 1984, I had no idea how popular it would become or that I’d still be doing it 35 years later. Our audiences have been extraordinary, and we thank you for listening over the years. We look forward to many more years of presentations, but we need your help. Please go to wonders.physics.wisc.edu and click on Donate for your tax-deductible contributions.**

**Sprott: And now I’d like to end the program as we do every year by making for you a cloud...**

**9XM power off**

**Top Hat**

**Cloud on**

**ON AIR sign off**