Session Descriptions

Keynote Address 8:45 - 9:45	**Dying to be beautiful? Using medical physics tools to answer a historical mystery** The very lovely Maria, Lady Coventry, died in 1760 at the tragically young age of 28, leaving her three small children motherless. At the time, funeral notices described her death as from consumption, but several years later the prolific letter writer Horace Walpole said she died from lead white make-up, and this story has clung to her memory ever since. I am a medical physicist who builds biomedical devices to study toxic metals. I have been studying people's exposure to lead for nearly 3 decades and have a particular interest in women's health. My experience is, and my work has demonstrated, that lead is very toxic. But… the latest 2019 draft U.S. government medical summary on lead toxicity say that inorganic lead does not pass through the skin. I have started asking the question: just how toxic could mineral white lead make-up be? In this talk, I will describe the biomedical devices I have designed and built, and how we have used them to study modern lead exposure. I will explain the relationships we have found between lead exposure and health effects. I will finish by explaining how I and a small team of undergraduate summer students plan to piece lead biokinetic information together and conduct an experimental research program to answer the question: is it possible to die from your make-up?	**Fiona McNeill** is a Professor of Physics and Astronomy at McMaster University where she has been a faculty member since 1997. She obtained her B.Sc. in Physics from the University of Edinburgh and her Ph.D. in Physics from the University of Birmingham. She spent time working in Sweden and the U.S.A before coming to Canada. She has published over 130 peer reviewed articles on the effects of radiation and toxic metals. Her interest in physics started through her dad, a high school physics teacher, and was fostered in her teens by two inspiring physics teachers who encouraged her to pursue her studies at university.

Session A 10:00 – 10:45	**Physics Teacher Preparation at Hubei University** Both traditional and modern approaches are used to training physics teacher at Hubei University. We will focus on the modern approaches, where we focus on the application of digital simulation technique and mobile phone sensor in the process of teacher preparation, which greatly improve the effect of physical experiments, but also improve students' operational ability as well as innovation ability. In addition, as an influential instructional assessment tool, RTOP's practical use in teacher preparation at Hubei University will be introduced.	**Yimin Ding** is a full professor of physics, and the dean of department of physics at Hubei University. He is an executive member of Hubei Association of Physics Teachers and is also a director of China Association of Higher Physics Education Researchers. His research focuses on statistical physics and physics teacher preparation. **Dr. Weining Wu** is an associate professor of physics at the Hubei University in Wuhan, Hubei, China. Weining is also an executive member of Hubei Association of Physics Teachers. His research interests focus on physics education and educational measurement and evaluation. **Dan MacIsaac** is an Associate Professor of Physics at the State University of New York College at Buffalo (SUNY Buffalo State), where he coordinates programs in physics

		teacher preparation. Dan is a Fellow of the AAPT, regularly publishes in The Physics Teacher and collaborates internationally in the scholarship of learning and teaching physics.
	A: Tangible Waves & Sound This workshop involves a fun series of hands-on activities to illustrate and help students understand concepts in the waves and sound unit. **B: Why do you sound like Mickey Mouse when you inhale helium?** High school textbooks often give a poor or incomplete explanation of why your voice seems to have a higher pitch when you inhale helium. The correct explanation is more complex but fits perfectly into the grade 11 sound unit. In this session we will look at the correct explanation for both why your voice sounds "higher pitched" when you inhale helium and "lower pitched" when you inhale sulfur hexafluoride.	**A: Saara Naudts** After completing high school in Belgium, I moved to Canada continued to pursue my interests in STEM. In 2004, I started teaching physics in the Peel District School Board. On my journey to understand Physics Education Research and become a more effective teacher, I have been fortunate to keep meeting many wonderful, inspiring teachers, often through OAPT. **B: James Ball** I have been teaching physics for 32 years. My first 31 were as a high school teacher and now I am a sessional lecturer at the University of Guelph. My teaching technique has evolved and continues to evolve through my years of work with the OAPT.
	A: Teaching grade 11 and 12 Physics in the same classroom The presentation will describe the challenges of teaching of two different Physics syllabi in the same classroom and approaches on how to overcome these these challenges. **B: Twitter part 2: sorting it all out** Nobody blogs or uses Twitter anymore, right? Well, except for educators! Conferences and newsletters are great sources of PD, but they are often few and far between. The internet is vast source of resources, but how to find and curate them? Social media is your new PD provider. This is part 2 of last year's introduction session: learn strategies for keeping track of all that cool stuff and maybe why you should start a blog.	**A: OlgaSmakhtina** Physics teacher in Royal Imperial College of Canada, St Catherines with many years of international teaching experience in Sri Lanka, Ireland and South Africa **B: Andrea McPhee** Andrea teaches physics and math at Jarvis Collegiate in Toronto. Most of her really cool ideas come from the internet. Using PER, she has been transforming her classrooms into student-centred and inquiry-driven so the learning sticks. As a TDSB Digital Lead Learner, she thinks technology can be a valuable tool to enhance student learning and collaboration, as well as making many processes more efficient. She tweets at @Ms_McPhee and blogs occasionally at http://equalsmcsquare.blogspot.ca
	Pitch Black! Join the 500+ teachers that have discovered how a host of other design challenges have transformed their classroom. Offering a cross-curricular approach to teaching - these activities cover math, language, science, art and social studies. Even better, the resources are FREE! In Pitch Black, students will become Power Systems Engineers. A blackout usually hits with extreme heat or with extreme cold, such as ice storms, which means engineers have to work as quickly as possible to restore power to keep people safe in the intense weather. Students will have to troubleshoot an LED that won't light up and decide which of the three city locations	**Miranda Carlson-Strain** Miranda Carlson Strain is the Diversity, Inclusion and Community Programs Coordinator at Western Engineering Outreach. Within her role, Miranda works to design and deliver teacher professional development to assist teachers with how to bring technology and engineering into their classroom. In addition, she works on many programs to increase the diversity within the engineering profession such as just for girls activities and community STEM nights.

	(hospitals, airports, schools, nuclear power plants, malls or residential neighborhood) will receive power first and why.	
	STEM Club and Travel This session will discuss the benefits to having a very active STEM club in your school. From the impact on student achievements. to their personal connections to the real world, STEM club has served student's needs and has provided them with opportunities and insights they would never otherwise would have had. Come find out what is involved in putting together such a program, the speakers that have presented, and the places we have travelled.	**David Page** David Page is the science department head at Assumption College in Brantford Ontario. Over his 30 year career he has been involved in many aspects of school life from running students council, coaching, and organizing Relay for Life events but nothing has had a bigger professional impact than his STEM Club.

Session B 11:15 – 12:15	**A: Closing the Gender Gap in High School Physics** In recent years, awareness of the gender gap in physics and engineering has greatly increased. Unfortunately, little progress has been made to remedy this issue and the research literature is still severely lacking. This talk will present newly obtained high school physics enrollment numbers from across Canada, providing the most detailed picture of female enrollment to date. I will also provide an update about a pilot study testing interventions to increase female enrollment. We will be scaling up in the coming year, hoping for a wide-reaching impact, but need the help of dedicated teachers. Together, we can close the gap! **B: Meta-demonstration: Choosing a lecture demo approach** We will experience a familiar physics demonstration three ways: using the Interactive Lecture Demonstration (ILD) approach (Thornton & Sokoloff), using the Investigative Science Learning Environment (ISLE) approach (Etkina et al.), and as a traditional lecture demonstration. The audience will play the roles of students. We will then discuss the different approaches from both the student and instructor perspectives, focusing on learning goals and outcomes. [Based on invited talk at AAPT Winter Meeting 2020]	**A: Eamonn Corrigan** I am currently a PhD student at the University of Guelph studying the gender gap seen in physics and engineering. Having previously completed an MSc in theoretical relativistic physics at Guelph, and my BEd at Queen's University, the switch to physics education research was the perfect way to merge my interests. I work hard to continuously update my teaching practice and love collaborating with other TAs to grow as educators. Beyond my teaching and research, I have a passion for science outreach, volunteering for numerous activities around the university and I have authored a series of children's books on science. **B: Carolyn Sealfon** Carolyn Sealfon has taught, or more, facilitated learning in the University of Toronto Department of Physics, at Princeton University as Associate Director of Science Education, at a Pennsylvania public university, at an inner-city high school in New Jersey, and in interactive workshops across the continent. She earned her PhD in theoretical cosmology at the University of Pennsylvania and her BA in physics from Cornell University. She aims to foster scientific reasoning, curiosity, and compassion to empower diverse demographics to realize their full potential.
	A: Radon Gas: Ionization, tumor formation by alpha particles Heath Canada has begun a two year awareness program identifying the danger of radon gas in residential homes. This presentation will describe the research that formed the basis for this program, actionable limits for radon, mitigation techniques and the effects of alpha particles on tissue. Measurement of	**A: David Gervais** Dave Gervais taught Biology, Chemistry and Physics. He was department head for Science and Technology for 15 years. He has been a life long learner, taking courses throughout his career. He will graduate this year from Seneca College (Health and safety Certificate). He is the Chair of the

	alpha, beta particles will also be demonstrated. (Energy and Society D3:10, D3:11). **B: Debunking Radiation Myths** This session would describe one lesson that I used for the Energy and Society Unit. My students loved this assignment, and I was hoping I can share it. * Present common myths about radiation, and take a poll to see who think it is a myth and who thinks it is real. * Research paper reading about Physics and Superheroes- teaching them how to read scientific articles. * Assign each group a superhero that uses the myth of radiation - (Example: Peter Parker got bit by a radioactive spider and become Spiderman) * Research the background of the story and how the myths of physics may have affected the story plot * Assessment: Explain the Myths behind the superhero movie. Create a new superhero that uses the laws of radiation physics, or recreate a clip from the movie to make it match physics.	STAO Safety Committee, since 2011. He currently builds residential homes, and does home renovations. **B: Mona AbuSharkh** My name is Mona Abu Sharkh, and I am a secondary physics teacher with Thames Valley District School Board. My goal is to get students to fall in love with physics and to make it as much fun as it can be! I love hands- on learning and group work.
	Time Dilation and Detector Physics (PI) Time dilation is one of the key features of special relativity. But it's also a very abstract concept. This session will show a hands−on activity, based on the light clock thought experiment, for introducing time dilation. It will also explore how particle detectors at the Large Hadron Collider use ideas in Grade 12 physics such as magnetic force, momentum, and energy to detect exotic subatomic particles. Both lessons presented are from Perimeter Institute's new Contemporary Physics resource.	**Damian Pope** Damian Pope is a member of Perimeter Institute's Outreach department. He holds a PhD in theoretical physics, specializing in quantum physics, and now works to communicate and teach physics to students, teachers, and the general public.
	The freedom of not knowing the right answer Move away from cookbook labs! In this session, you will have a chance to work with others to construct an investigation to: explore the relationship between variables given a collection of items; consider how to collect and present data; and construct thoughtful discussion questions to support higher-order thinking skills.	**Tasha Richardson** Tasha Richardson is a high school physics teacher for twenty-plus years, PhD candidate at OISE/UT, and past lecturer at Western University. Her classroom practice is continually evolving as she considers how to provide opportunities for students to authentically engage with physics.
	KABLAMMO! Physics demos for the classroom. We can all remember at least one physics demo that captured our imagination when we were students and, in many cases, lead us down the road to becoming a physics teacher. In this 'lecture' Orbax will present a variety of in class lecture demonstrations with a focus on affordable demos that are easily to build on your own.	**Orbax, University of Guelph** Orbax has been a sessional lecturer at the University of Guelph for 12 years, and is currently the Science Communication & Media Officer for the University of Guelph Dept of Physics. He has presented science all over the world in his live show and on TV on shows like Daily Planet and Outrageous Acts of Science.

Session C 1:30 – 2:45	**Going Gradeless in Senior Physics** Tired of students always fighting me for marks I tried last year removing them completely. My hope was to refocus my classroom on learning and my session will cover my journey to going gradeless, strategies for feedback I've implemented, how changing the culture of the classroom can make a big difference in your practice and why students are asking more teachers to go gradeless at my school.	**Ashley McCarl Palmer** My name is Ashley and I have been teaching with the Waterloo school board for 10 years. I have always wanted to better my craft and find the balance in a course that allows for discovery of how the world works around them while also meeting the dense content requirements of physics courses. I've been making alot of changes over the past few years...implementing more inquiry, bringing real world connections into the classroom, focusing on 21st century skills, spiralling content to enhance retention. My most recent work in feedback has shown really promising results so far and I look forward to continuing to build on this.
	A: Developing Transferable Skills in the Physics Classroom The "Inquiry in Physics" course at McMaster gives students an opportunity to explore areas of physics that interest them and also to learn about a broad range of topics from their peers. Throughout, there is an emphasis on developing transferable skills by exploring presentation styles for different audiences, giving and receiving constructive feedback, writing with purpose as well as other themes. Students have an opportunity to consider what goes into physics teaching by developing demonstrations or experiments using easy to access materials. Working in small teams, they consulted the Ontario Science curriculum (grades 9 – 12) to create learning objectives for their activities that matched a particular course (or courses). Students also generated accompanying questions appropriate to their chosen grade level. In this session, we will share some of the results from this year's cohort. **B: Cognitive Apprenticeship: Teaching Students to Think Like an Expert** Why do students of all levels grind to a halt and often fail the moment we remove their "training wheels" for the first time? It is easy for teachers of graduate students and high school students alike to conclude that rich, nuanced tasks must be delayed until students reach a later stage of their educational training. However, the solution is the opposite! From day one students must practice the thinking habits and practices of the expert. They need routine exposure to rich tasks that are carefully calibrated to their level and introduce them to the culture of professional practice; they need a cognitive apprenticeship.	**A: Miranda Schmidt** is a Teaching Track Assistant Professor at McMaster University. With a background in biophysics, I enjoy highlighting the interdisciplinary nature of science especially when teaching first year courses. I am interested in exploring how our curriculum choices can help prepare our students for their future careers by incorporating meaningful activities that develop discipline specific knowledge along with transferable skills. **B**: **Chris Meyer** has taught physics for 22 years in the Toronto District School Board. He is currently the Hybrid Teacher-Coach for Science at the TDSB and is the president of the Ontario Association of Physics Teachers.
	Fields are Real: Visualizing Fields (PI) Fields are a very abstract concept that students often find challenging. Focusing on the electric field, this session will show some simple hands-on activities that make fields more tangible and help students to visualize them. All of the activities presented are part of Perimeter Institute's new Fields resource.	**Damian Pope** is a member of Perimeter Institute's Outreach department. He holds a PhD in theoretical physics, specializing in quantum physics, and now works to communicate and teach physics to students, teachers, and the general public.

		Laura Pankratz has taught at the high school level in Alberta for 8 years before working for almost 20 years with Alberta Education as the Physics 30 Examination Manager. She has been associated with the Perimeter Institute since 2010. Most recently she has been a facilitator at the last few Einstein+ teacher institutes and as the Alberta and Western Canada Teacher Network Coordinator.
	Hack your curriculum with Astrobiology During this hands on workshop we will explore topics in Astronomy and particularly Astrobiology that tie to high school science and physics courses. From planning human habitats on Mars to exploring the building blocks of life on comets there are many ways to bring our curricula to (space) life! You will explore various possibilities and then develop your own resources and lesson plans to suit your classes.	**Libby Boulianne** Dr Bou completed her PhD in Astrophysics at the University of Toronto where she discovered her love of teaching. Whist a grade 6-12 Physics teacher in the UK she attended the European Space Agency teacher training course. Now back in Ontario, she is working on ways to enrich and inspire her students with her passion for space!
	The search for dark matter Dark matter makes up a huge portion of our universe but remains unseen. Many scientists think it is a new particle, yet to be discovered. The search for dark matter is one of the most pressing pursuits in physics today and understanding it could explain the history and structure of our universe. In this session, participants will learn about the fundamental forces and how researchers are working to understand dark matter. They will dive into methods of detection and learn about the large-scale dark matter experiments underway at SNOLAB, Canada's deep underground particle physics laboratory.	**Blaire Flynn** Blaire is the Education and Outreach Coordinator at SNOLAB. An enthusiastic science communicator, she works to share research in a fun and informative way and ensure young people from diverse backgrounds can imagine themselves in STEM fields. Blaire worked in environmental science research before making her way into outreach. **Chelsea Pike** is the Communications Coordinator at SNOLAB. Formally trained as a secondary science teacher and science communicator, she's passionate about sharing her love for science with others. Chelsea's scientific background is in health sciences and biology, but that's what adds such a fun twist to particle physics outreach.
	Media Numeracy: What Story Do the Numbers Tell? The rapid growth of social media and on-line information sources has created an environment where the influence of trusted authority shrinks as quickly as the availability of information increases. In this environment, it is essential that each person develops their own ability to assess the trustworthiness of media stories and the information they convey. One important skill is media numeracy -- the ability to discover the story being told by the numbers, and to compare it to the story being told by the text. This workshop will begin with an introduction to media numeracy that includes a few simple but powerful tools for finding the story the numbers tell. This will be followed by small group discussion and analysis of selected stories from the media. You will need access to a calculator for simple arithmetic.	**David Venus** is a Professor of Physics and Astronomy at McMaster University, where he teaches a general elective course on Media Numeracy. As an experimental physicist, he has made a career of finding the story in numbers. As a teacher of physics, he finds that students often have difficulty applying the mathematics they learn in one context to a new situation. These two themes come together in Media Numeracy. His articles on topics in Media Numeracy have appeared in The Toronto Star and The Hamilton Spectator.

Session D 3:15 – 4:30	**A: Towards Open Education in Physics at Ontario Tech University** At Ontario Tech University, we've begun a series of initiatives to enhance our curriculum through open educational resources; the low cost of OER benefits students, and the increased flexibility supports improved pedagogy. These initiatives include using an open-source system for delivering online homework in a sophisticated mastery setting, using open textbooks where the quality is sufficiently high, writing our own open textbooks, and standardizing all programming in the curriculum on Python, an open source programming language. During this talk, we will discuss our motivations for using and creating OER, challenges that we've faced, and successes that we've had. **B: Integrating computation into undergrad physics curriculum** The University of Guelph is conducting a multiyear study aimed at making coding a way of life for physics undergraduates. Computational activities have been integrated across multiple core physics courses, providing a continuous learning experience from Introductory Programming to our capstone Computational Methods course. At the end of the second year of the study, we compare performance in second year courses between students who had coding as a tool in their first year, and those who did not. We combine code evaluation, interest and confidence surveys, and focus group feedback to iteratively develop the interventions for the third year of the study.	**A: Joseph MacMillan, Rupinder Brar** Dr. Joseph MacMillan is an Associate Teaching Professor in the Faculty of Science and the Undergraduate Program Director for Physics. Dr. Rupinder Brar is an Associate Teaching Professor in the Faculty of Science and the Associate Dean of Undergraduate Studies. **B: Matt Steffler, Michael Massa** Matt Steffler is a PhD candidate at the University of Guelph, investigating different forms of technology in physics education. Mike Massa is an Assistant Professor at Guelph; his research includes physics education and curriculum development. They are interested in students' perceptions of the value of technology in the classroom, both as learning tools and skills development for future careers.
	Problem Solving Challenge: Thor's Hammer! Try a rich problem solving challenge! Teachers will work in small groups on our grade 12 challenge "Thor's Hammer", which applies concepts related to energy, momentum and collisions. Students (which means you) have to measure features of the setup to define the problem, follow a structured process that emphasizes multiple representations, find a solution, and test the result! This challenge fits in nicely towards the end of the unit as an opportunity for students to test their understanding of concepts they have built during previous lessons.	**Mike Doig** has been teaching high school physics for 15 years at York Mills C.I. in Toronto. He utilizes small group learning and guided inquiry lessons to offer his students a rich learning experience throughout the semester. **Herman Lam** is a mechanical engineer and now teaches physics and French immersion science at York Mills C.I.
	NEW Black Hole Physics (PI) Black holes are some of the most fascinating objects in the universe – gravitational gluttons even light cannot escape – and they never fail to captivate students. In just the last few years, a number of astounding advances have been made in black hole research from the detection of the gravitational waves they produce to the first image of a black hole, M87*. This session will explore the key properties of black holes with hands-on student activities and show how you can apply black hole physics to core curriculum topics including force, gravity, orbits, doppler shift and escape velocity. We will	**Kelly Foyle** Kelly is an outreach scientist at Perimeter Institute delivering and developing science educational content. She has developed online enrichment courses in cutting-edge physics for high school students and develops the content for Perimeter's International Summer School for Young Physicists. She has given workshops on science and modern physics across Canada and abroad. Kelly has a doctorate in astrophysics from the University of Heidelberg in Germany and was a

	also explore some the cutting-edge research on the horizon!	postdoctoral researcher at McMaster University working before joining Perimeter in 2013. She loves sharing her passion for physics and astronomy with students, teachers and the public. **Damian Pope** Damian Pope is a member of Perimeter Institute's Outreach department. He holds a PhD in theoretical physics, specializing in quantum physics, and now works to communicate and teach physics to students, teachers, and the general public.
	Connecting Physics & Human Homeostasis - Online Case Study Homeostasis, a biological state of dynamic equilibrium that ensures survival, relies on physics principles to maintain a healthy body. A balance of biology, physics and chemistry allows our bodies to respond to varied stimuli and remain in equilibrium. Physics principles explain proper blood circulation and healthy kidney function. Come explore an online case study in a role of a STEM professional and experience how physics principles are integral in maintaining homeostasis and can extend the lives of individuals when our bodies fail us. Because after all, the natural world is a balance of all science disciplines.	**Amanda Wilson** is a former secondary science teacher. She has been an ardent advocate for technology integration in the classroom for over a decade. In addition to her classroom experience she supported teachers as a STEM instructional specialist for a large urban district and at University of Florida. Amanda joined ExploreLearning Professional Development team as an Implementation Coordinator, her role is to provide customers with successful implementation support of Gizmos, STEMCases and Reflex.
	Improv-PHYS-ation How can we help all our students experience what we love about physics, such as the playful curiosity and the excitement of exploration? Join us for a laughter-filled workshop where we will engage in active-learning exercises borrowed from improvisational theatre (improv) to practice creativity, listening, collaboration, and resilience. We will discuss how we can integrate and adapt such exercises to enhance physics teaching and learning.	**Carolyn Sealfon** has taught, or more, facilitated learning in the University of Toronto Department of Physics, at Princeton University as Associate Director of Science Education, at a Pennsylvania public university, at an inner-city high school in New Jersey, and in interactive workshops across the continent. She earned her PhD in theoretical cosmology at the University of Pennsylvania and her BA in physics from Cornell University. Nancy Watt is a writer and applied improviser from Second City's Improv Conservatory and Sketch Writing Programs. She delivers dynamic workshops on communications and creativity in unconventional environments to the corporate, education and healthcare sectors, and is rated in the top five of the Leadership Workshops at the International Microsoft World Partner Conference and a regular at Huffington Post's team building events.

Saturday, May 4

Time	Description	Presenter(s)
Session E 9:00 – 10:10	**Phun with Fizx** Do you know how to fly! Hooks, discrepant events, and cognitive dissidents provide an interest point for students to make science attractive, fulfilling and most of all, fun. I will provide many demos that will keep you thinking and re-live the excitement of science. Bring your phones, cameras, and note pads.	**John Caranci, OISE/UT** 40+ Years as a Poet, Physics and Mathematics Teacher, Lecturer and Department Head; Awarded Life Membership for Outstanding Service; Ontario Association Physics Teachers; Published Poet – White Wall Review Literary Journal: Winner of the Raymond Chang Literary Award 2007 – Poetry; Senior Science Fellow - York Seneca Institute of Science, Physics Teacher Ontario Science Centre Science School; Physics MT Lecture; Ontario Institute for Studies in Education; Author/Editor of many mathematics, physics and elementary texts; Author of “Dance in Wonder” Poetry Volume, Scientists in School Elementary School Presenter; Auto racer GT2; Online Rfactor Gamer.
	Defining Quantum Uncertainty (IQC) The Heisenberg uncertainty principle is a ubiquitous feature of quantum mechanics, and among the most strange when introduced to students. However, it has very clear analogies in laser optics, which can be used to develop affordable hands-on experiments and activities for the classroom. In this workshop, we'll go through an activity that uses the uncertainty principle to measure small distances and infer Planck's constant, using only a laser pointer and a print-at-home sheet. We will connect this idea to space telescopes, medical imaging, and the superposition and measurement principles of quantum mechanics.	**John Donohue** John Donohue is the Scientific Outreach Manager at the Institute for Quantum Computing, responsible for bringing quantum science out of the lab and into the classroom and other public spaces. John has a PhD in Physics from the University of Waterloo, specializing in quantum nonlinear optics.
	A: Geoengineering 101 Climate change is a hot topic. How can we link the latest headlines with the basic physics behind them? A simple paper-based simulation can allow our students to explore different scenarios, providing the hook for a more in-depth examination of the physics behind proposed geoengineering projects. This session introduces the simulation and various projects that can be used to explore the physics concepts that underlie the grade 10 climate unit. **B: Circuits - Predict, Observe, Explain, Reflect** An exercise for grade 9 or 11 electricity where students have to predict an outcome then reflect on the actual outcome. Handout provided with circuit diagrams and teacher notes.	**A: Robert Prior** Robert Prior has been teaching science for more decades than he wants to admit, and playing simulation games for even longer. You can find some of his resources at http://science.robertprior.ca **B: Alasdair Paterson** Alasdair is a physics teacher of 10 years in HDSB, with a prior background in the steelmaking industry. If you think you're disorganized, it's because you haven't seen him work.

Session F 10:30 – 11:40	**A: Exoplanetology for the rest of us** The Jarvis Science and Engineering club partnered with the RASC in the Robotic Telescope Program to find an exoplanet as part of a pilot program to provide high school students access to university-level research. Come learn about this new potential resource: what worked, what didn't, and most importantly... did we find a planet? **B: Balloon Astrophysics** What does a balloon astrophysicist do? I will provide an overview of the field of astrophysics that sends telescopes on stratospheric balloon flights. You'll learn about benefits of balloons over satellites, current balloon telescope projects, and get introduced to Canadians you may not have heard of that are involved in those projects. We'll discuss the science and logistics of sending a balloon telescope over Antarctica. Get challenged and take home some interesting problems for your science and physics courses.	**A: Andrea McPhee** Andrea teaches physics and math at Jarvis Collegiate in Toronto. Most of her really cool ideas come from the internet. Using PER, she has been transforming her classrooms into student-centred and inquiry-driven so the learning sticks. As a TDSB Digital Lead Learner, she thinks technology can be a valuable tool to enhance student learning and collaboration, as well as making many processes more efficient. She tweets at @Ms_McPhee and blogs occasionally at http://equalsmcsquare.blogspot.ca **B: Vjera Miovic** Vjera teaches math and science in a TDSB school. She used to work on a balloon telescope and keeps following her former colleagues' work in the field. Vjera is happy to talk about Canadian contributions to space exploration, including recent projects in balloon astrophysics, to her grade 9 science class.
	How Strong of a Vacuum Can You Make with Your Mouth? In this workshop we'll use an exceptionally long straw to sip on a beverage. A simple measurement of how high up the straw we can suck the liquid will allow us to measure how much of a vacuum we can create with our mouths. After a discussion about pressure and how straws function, we'll calculate the theoretical maximum height that the liquid could reach; and in doing so, learn how a barometer works. Your students in SPH4C and SCH3U will love how much this demonstration sucks when you do it with them!	**Eric Haller** is a young physics teacher who is currently working as an occasional teacher for the Peel District School Board. He likes to attend all of the physics PD events he can. If you don't know who he is, you'll likely recognize him from a past event, or you may have even unknowingly read one of the many articles he's written for the OAPT's newsletter.
	Seeing how PER can help us teach Special Relativity Join this session to explore what physics education research has to say about our teaching of Special Relativity. The ideas from PER are applied in the development of inquiry-based activities that will help your students develop a more thorough understanding of the craziness that occurs when we travel really fast!	**Adam Mills** teaches IB Physics and Chemistry at Assumption College Catholic High School in Windsor. He is very interested in developing an inquiry-based classroom and improving the role that assessment plays in the learning process. Adam has completed two TLLP's and was honored by the University of Chicago with their Outstanding Educator Award. He is actively involved in the Math Club and coaches soccer.