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This is a graded discussion: 10 points possible

due Apr 3



Z10 Zoom Chat with Scientist/Alumni, 10 am Thr Mar 31

Mar 17 at 9:36am

Erin O'Connor

16

This is one of our highest profile Zoom guests and highly relevant to the course. It's a real opportunity for us to talk with him about gravity waves and merging black holes. Please join us live if you can!!!

This week's Zoom Chat will be on Thursday 10 am. It's a bit earlier than usual since Dr Iair Arcavi will be Zooming to us from the other side of the planet. He is an astronomer at Tel Aviv University and does research with gravity waves and merging black holes. He travels around the world giving talks on the subject. I encourage you to join us and participate in the discussion. Extra credit will be awarded to those who can attend live.

Zoom Chat with Scientist / Alumni, Thr Mar 31 at 10 am (Extra Credit if you attend LIVE)

▶ We had a great Zoom Meeting. Here is the recording:

<https://youtu.be/hdx1e1ch2rk> (<https://youtu.be/hdx1e1ch2rk>)

- Iair (pronounced, "ya-eer") Arcavi is an astronomer at Tel Aviv University in Israel. He earned his PhD in astrophysics from the Weizmann Institute of Science, and was later a NASA Einstein Postdoctoral Fellow at the University of California Santa Barbara. Iair has been using the robotic telescopes of Las Cumbres Observatory, networked around the globe, to catch fleeting astronomical events such as exploding supernovae, stars torn apart by supermassive black holes, and the flare made by merging neutron stars, known as a kilonova. Iair is also an amateur photographer and enjoys an addiction to chocolate. Iair was very involved with our SBCC Astronomy Club for several years while working here in the US. He arranged special tours for us of the Las Cumbres facilities and telescopes. He has a passion and an interest in science education and we were sad to lose him when he returned to his teaching/research post in Israel.
- YouTube Video featuring Iair Arcavi and his research at Las Cumbres Observatory (Iair at 0:30, 1:45, etc)

https://canvas.sbccc.edu/courses/46681/assignments/702496?module_item_id=1851876

Each week we will set up a Zoom chat with a scientist working with astronomy, astrophysics, cosmology, or science and engineering, or an alum of SBCC from our astronomy program to see what they are doing now with school, education, or their lives and careers. Some of our former students are doing amazing things. I will be reaching out to contacts I've made over my teaching

career so that we can personalize and humanize the material and create more of an "in person" classroom environment.

These Zoom chats are optional. You are not required to attend, but you are certainly invited. These meetings will be at random various times during the week, subject to the availability of our prestigious guests. The meetings are not lectures. I'm more interested in chatting with our guests to have them tell you a bit about their school, work, and interest in astronomy and to give you an opportunity to ask questions and interact with them yourselves.

If you can not attend, that is fine, you will still get full credit by watching the recording and participating in a discussion about the Zoom meeting.

After participating in the Zoom Chat and/or watching a recording of the Zoom Chat, please post your reaction to the meeting. What did you find most interesting about what they are doing or what they had to say? How is it relevant to your life or educational pursuits? What qualities about their approach or perspective to education (or life) do you think has helped them succeed and to get to a place where a Black Holes Class teacher would want to invite them for a Zoom Meeting with their class (haha).

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[https://](https://canvas.sbcc.edu/courses/46681/users/375381) **Sarah Savage** (<https://canvas.sbcc.edu/courses/46681/users/375381>)

Apr 2, 2022

⋮

I really enjoyed hearing from Dr. Arcavi about his work on discovering the kilonova a few years ago. It happened right about the time when I started attending the Astronomy on Tap events and recall hearing about it there. I like the idea that astronomy is a collaborative process and can envision how LIGO had to relay the news of the gravitational waves they observed to LCO, which then notified its scientists and sent its telescope network to search that area of sky, and there were 5 teams looking in the same 45 minutes. This is what science should be! A collaboration among humans for a common goal. It's amazing that our technology can make Earth feel small in this sense. Dr. Arcavi's work on neutron stars and black holes sounds very exciting!

← Reply

○



Erin O'Connor (<https://canvas.sbccc.edu/courses/46681/users/24247>)

Apr 24, 2022



I love how you view this work with the Kilonova as an example of all the good that humans can do when working together to achieve a common goal. Yes, it was a very exciting event and it was great how Dr Arcavi was able to share with us the energy and excitement of that day!

[← Reply](#)



Abigail Jacobs (She/Her) (<https://canvas.sbccc.edu/courses/46681/users/367167>)

Apr 3, 2022



Dr. Lair Arcavi is a very interesting person and is so Intelligent, he has achieved so many goals and seen so many things he is definitely an inspiration as far as being goal-oriented in his line of work. It's amazing that in just 100 years since Einstein we have discovered so much and created so much technology that he thought never possible. The machine that they are using is able to go through all of the other disturbances on earth and find blackhole mergers a billion lightyears away! I wonder how much we will discover in the next 100 years and what percent we will be able to discover about the universe. Hearing speakers like Dr. Lair Arcavi pushes me to continue my goals and gives me hope that the end will be so rewarding. To be able to speak about my future practice with such ease and knowledge like him would be so thrilling!

[← Reply](#)



Erin O'Connor (<https://canvas.sbccc.edu/courses/46681/users/24247>)

Apr 24, 2022



I'm glad that you found Lair's talk inspiring, and I like how you extracted from that an inspiration for yourself to work hard toward your own goals and aspirations. I think it is very true that people can visualize and help manifest positive things in their lives. If you see yourself successfully accomplishing your goals, you are much more likely to visualize your goals. Keep up the good work!

[← Reply](#)



Naomi Xu (<https://canvas.sbccc.edu/courses/46681/users/27955>)

Apr 3, 2022



I remember him coming to cc to give a talk about LIGO in 2019. He was telling us about the discoveries that earned them the nobel prizes, and it's so amazing to hear their progress that they've discovered so much now that they don't even get recognized for them anymore just out of sheer volume. I think this is a perfect example of why I disagree with Occam's razor that we shouldn't invest in things we have no way in furthering, because less than a hundred years ago, we deemed this to be impossible.

← [Reply](#)



Erin O'Connor (<https://canvas.sbcc.edu/courses/46681/users/24247>)

Apr 24, 2022

I don't think they've won a Nobel prize for the Kilonova, at least not yet, although in 2017 three scientists won the Nobel Prize for their work with developing LIGO and detecting gravitational waves. Nobel prizes take time to win, but this is definitely a project that seems like it should be high on the list and I'm hoping to see some Nobel prizes go in this direction.

Great point about not being too glib with using Occam's Razor to cut out theories that seem impossible because with new technology these theories might be testable. LIGO and detection of gravity waves and discovery of merging black holes and Kilonovas are a fabulous example.

← [Reply](#)



Luke Rutherford (<https://canvas.sbcc.edu/courses/46681/users/373514>)

Apr 3, 2022

One of the most interesting parts of what Dr. Lair Arcavi does is the observatory he works on itself, the Laser Interferometer Gravitational-Wave Observatory. I find it almost impossible that the observatory can pick up microscopic movement in space while ignoring all the other motions along the way. I also admire Dr. Lair Arcavi's work ethic, and I was surprised that a 12-hour long quantum mechanics test exists. It goes to show how dedicated people like Dr. Arcavi are towards what they do.

← [Reply](#)



Erin O'Connor (<https://canvas.sbcc.edu/courses/46681/users/24247>)

Apr 24, 2022

These very advanced multi-billion-dollar observatories involve thousands and thousands of scientists all over the world. Dr Arcavi works with data from these observatories, but scientists don't have to actually go and be at these observatories anymore. With computer technology the data is disseminated and distributed so that many scientist can work on it at the same time.

← [Reply](#)



(<https://>)

Brian Wolden (<https://canvas.sbccc.edu/courses/46681/users/274832>)

Apr 3, 2022



The discussion with Dr. Arcavi this week was fascinating! The research he is doing into black holes and kilonova is really exciting. More exciting is the fact that we are even able to detect and observe these events at all! The system that Las Cumbres Observatory has set up is a brilliant idea and its really cool to see what possibilities this unlocks for rapid observation. I look forward to seeing what else they are able to observe as well as how their theories regarding stars falling into supermassive black holes works out.

← [Reply](#)



(<http>)

Erin O'Connor (<https://canvas.sbccc.edu/courses/46681/users/24247>)

Apr 24, 2022



Yes, LCO is doing some amazing work. I think we will see many more contributions from this relatively new Global Telescope Network.

← [Reply](#)



(<https://>)

Malcolm Tircuit (<https://canvas.sbccc.edu/courses/46681/users/427388>)

Apr 3, 2022



It was great hearing lair talk more about LIGO and how gravitational waves are detected. The fact that humans are able to build a device to detect such a minuscule change is insane to me. I also didn't know to over half of the things detected by LIGO are false alarms. Another thing I found interesting was that amateur astronomers can have so many telescopes and viewing centers. I never really thought about what the word "amateur" meant. You technically be an amateur and have 12 telescopes that cost thousands of dollars and make discoveries. It was also cool to hear how astronomy on tap introduces so many people to the world of astronomy.

I really liked hearing how lair had a part in making astronomy on tap available in Santa Barbara.

← [Reply](#)



Erin O'Connor (<https://canvas.sbcc.edu/courses/46681/users/24247>)

Apr 24, 2022

Yes, the story about LIGO, about the detection of merging black holes, and then the revolutionary detection and monitoring of the Kilonova event, these are historic discoveries.

← [Reply](#)



Alak Fryt (He/Him) (<https://canvas.sbcc.edu/courses/46681/users/354278>)

Apr 3, 2022

▶ What I found most interesting to listen about was when Dr. Arcavi was talking about the merging of neutron stars and how they detect the gravitational waves that leads to looking for those flashes of light. I learned from Earth 101 last semester that these merging neutron stars are called Kilonovas and so it was kind of exciting to listen to Dr. Arcavi talk about this subject and then realize that I knew what he was talking about. I didn't really think about how extensive the process is to detect a kilonova though. It's very interesting how they use two perpendicular lasers that are sent out about 2 miles long and reflected back with a mirror to detect the slightest movements from gravitational waves. It's incredible to think about!

← [Reply](#)



Erin O'Connor (<https://canvas.sbcc.edu/courses/46681/users/24247>)

Apr 24, 2022

That's great to hear that you learned about Kilonovas in class last year. These are a very new topic and are just now being introduced in textbooks. The Las Cumbres Observatory, based here in Santa Barbara, played an important role in discovering, observing, and monitoring the Kilonova, so this topic is of local interest and significance.

← [Reply](#)



Franco Diaz Campo (<https://canvas.sbccc.edu/courses/46681/users/403036>)

Apr 5, 2022



Hi everyone!

I know this is something I say almost every week, but this is one of my most liked meetings. Every week, Professor O'Connor surprises me with very well-known people in physics. They are people who know what they are talking about, and that has made a lot of things that help them understand and have a better knowledge of every topic in physics. I liked this conference a lot because it was entertaining. Every slide of his presentation was outstanding. All the things he does every day are exciting, and he is very passionate about what he does.

PLEASE keep bringing people like him!

Thanks.

← [Reply](#)



Erin O'Connor (<https://canvas.sbccc.edu/courses/46681/users/24247>)

Apr 24, 2022



Glad you enjoyed the presentation. Iair Arcavi is really an inspiring person, teacher, and researcher. It is still early in his career and I would not be surprised to hear much more about his future contributions. Keep your eyes out, you may be reading about him or reading books he's written or hearing about discoveries he has made.

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