

01:18:36 John D Rutledge: What exactly is an astronaut? Should tourists be required to conduct research?

01:26:56 Elif Keve: Very happy to see inspiring women. They encourage me more for further.

01:27:14 Elif Keve: Thank you @NicolaStott

01:28:10 Elif Keve: F5

01:30:42 Elif Keve: I think we dont see presentation

01:31:23 AIAA LA-LV 2: @Elif, Dr. Arthur is just reading something, he will show the slides shortly

01:36:52 Ian MacNeil: Is it possible to get a copy of the text for this current presentation from Gordon Arthur. I like it!

01:41:31 AIAA LA-LV 2: @Ian, yes, will work on it and get a copy of the text of Dr. Gordon Arthur's speech

02:06:08 Mike Nygren: Problems we still have not solved.

02:08:26 AIAA LA-LV 2: @Mike, indeed, need to keep the efforts.....

02:09:19 Mike Nygren: Indeed. :)

02:09:21 Ian MacNeil: This is a recording

02:09:51 Liam Kennedy: Yes... it's a recorded playout.

02:09:59 Elif Keve: yeah because at camera I see madhu only

02:10:01 AIAA LA-LV 2: @Ian, yes, the speaker recorded this morning. He is here with us but he has a sore throat

02:11:14 Mike Nygren: Good point about jobs!

02:11:54 AIAA LA-LV 2: @Mike, Indeed! You're right!

02:25:48 Liam Kennedy: Thank you

02:31:57 AIAA LA-LV 2: @Mr. Kennedy, Thank you!

02:40:44 Liam Kennedy: Sounds good

02:55:47 Anita Sengupta: am I up next?

03:03:36 Linda Restrepo: WOW Dr. El Sayary this is amazing!

03:08:02 Alice Gorman: These are so beautiful!

03:10:43 AIAA LA-LV 2: @Dr. Sengupta, as Madhu said, you're next after Prof. Samer El Sayary.

03:14:00 Elif Keve: Dr Samer, You are amazing as always.

03:17:19 Kaja Antleij: Thank you Samer!

03:18:17 Samer El Sayary: Thank you Kaja and Elif

03:18:28 Samer El Sayary: we are truly unlocking synergies here

03:20:30 Liam Kennedy: 7 mins of terror remains a fabulous way to illustrate such a crucial part of robotic exploration

03:21:55 Liam Kennedy: I wonder if we should now have a JWST 344 moments of terror (for each of the single points of failure for JWST).

03:30:58 John Rummel: Send chickens to Mars – make omelets

03:32:39 Liam Kennedy: Great presentation - thank you

03:33:04 Elif Keve: great great presentations today <3

03:33:08 Elif Keve: Thank you @anita

03:44:27 Kaja Antleij: HI @Liam Thank you for your question. Was not sure when/where to answer. No, we haven't yet applied but considering and exploring the ISS National Lab grants, Would your suggest other avenues in relation to the ISS? Thanks.

03:45:06 AIAA LA-LV 2: @Kaja, you can "Type Answer" in the Q&A Box

03:45:48 Kaja Antleij: Thanks

03:45:57 AIAA LA-LV 2: @Kaja, welcome!

03:47:29 Liam Kennedy: @Kaja - ISS National Labs is specifically for research where the PI is a "US person" (citizen/permanent resident). They can provide funding for the upmass/astronaut time. It might be worth reaching out to them to find out when the most appropriate funding round for this type of research will be open.

03:51:48 Kaja Antlej: @Liam, Thanks. Good idea about contacting them directly. We are aware of that US requirement.

03:53:36 Samer El Sayary: Good to see you again Phnam

03:54:17 Samer El Sayary: Cant wait to watch yours

03:54:43 Liam Kennedy: @Kaja - the currently open round is "TECHNOLOGY ADVANCEMENT"

<https://www.issnationallab.org/research-on-the-iss/solicitations/nlra2022-5/>

03:56:30 Liam Kennedy: Not sure if that can fit the scope of your work - but if so - please consider submitting that initial 2-page concept. There was a webinar last week - which they will post the recording of that soon.

04:02:54 Kaja Antlej: Thanks so much Liam, will check that.

04:12:04 Kaja Antlej: Another fantastic talk, thanks, Phnam

04:12:41 Liam Kennedy: Thank you Phnam

04:27:44 John J: Opportunities!

04:28:40 Divya Chander: Principle 3: This principle is manifest in the ability for life and consciousness to arise in the universe. See Robert Lanza's wonderful book, "Biocentrism."

04:36:19 Liam Kennedy: Wonderful. All very thought-provoking.

04:41:41 Divya Chander: good point, John, regarding Artemis.

04:41:54 Sina: Thanks for your wonderful talk. Dr. Terenzi, where would you place entropy and thermodynamic laws (specially the second law and arrow of time into any of the aforementioned principles)?

04:42:31 AIAA LA-LV 2: @Sina, Dr. Terenzi is typing her answer in the Q&A Box. Please wait for her to finish.

04:42:48 Divya Chander: @Sina, I had similar questions about entropy and time.

04:42:57 AIAA LA-LV 2: You should see it now. Thanks. She just finished typing and answered your question there.

04:43:17 AIAA LA-LV 2: Please see Dr. Terenzi's answer in the Q&A Box

04:45:06 AIAA LA-LV 2: You can see it if you click Q&A

04:46:39 Alice Gorman: People may be interested in the Declaration of the Rights of the Moon: <https://www.earthlaws.org.au/moon-declaration/>

04:47:10 Madhu Thangavelu: To allm please post questions on Q&A or on chat, and we'll see if we can pull them up during discussion following Rummel talk.

04:47:30 Madhu Thangavelu: Hope all are enjoying this event...

04:47:44 Sina: To get a good understanding of the universe discipline one also needs to merge quantum field theory, gas dynamics, cosmology, and a few more topics together!

04:51:23 Divya Chander: @John, that's correct. Nothing to prevent a few corporations (and maybe a few governments) from claiming property rights on the moon, cis-lunar space, and the solar system.

04:52:52 Alice Gorman: Thank you John

04:56:30 Adriano Autino: Dear colleagues, all of you are invited to the SRI special event Goodbye 2021!, monday December 20 20:00 UTC

<https://spacerenaissance.space/register-to-the-sri-special-event/>

05:02:35 AIAA LA-LV 2: @Sina, your question in the Q&A for Prof. Samer El Sayary was incomplete

05:05:05 Sina: It is complete now

05:07:54 Samer El Sayary: Thank you Sina for your question. Colonizing other celestial bodies is inevitable. Just a matter of time. Either we colonize other environments or not. The science that we will produce is what matters. It will pave the way for our survival and thriving too

05:10:26 John Rummel: Thank you all for an interesting day! I am tasked with parenting my 8-year-old, so will go now and rescue him from Minecraft and iPad overload. All the best for a wonderful holiday to all.

05:16:24 Divya Chander: @Madhu - that is a brilliant parallel from your father. Closed loop environmental life support in space (e.g. ISS) operate very similarly to the eukaryotic cell.

05:20:51 AIAA LA-LV 2: @Sina, it might be better you speak out your question..... you can unmute yourself if you like.....

05:22:38 Sina: God Equation is a great book by Michio Kaku in this regard.

05:22:57 Samer El Sayary: The equation of everything

05:23:29 Divya Chander: The Equation of Everything, TOE, may be manifest in the universe itself. It is both observer and the observed.

05:25:50 Alice Gorman: Very interesting, Divya!

05:27:05 AIAA LA-LV 2: @Elif, wait for Divya and Sina....

05:30:53 Elif Keve: <https://www.linkedin.com/in/elif-keve-893066b8/>
Please keep contact on LinkedIn

05:33:35 Alice Gorman: I fear I must leave the panel at this point - thank you Madhu for including me in this panel, it's been fantastic to have such a range of perspectives!

05:35:35 Elif Keve: I would like to contact to Space people in Italy too, Please leave me your contacts of linkedin etc, I am currently master student here and studying for sustainable building and doing research on sustainability in space architecture

05:36:18 Samer El Sayary: Thank you Diva, Post singularity will serve creating new extended possibility to our race

05:40:12 Divya Chander: @Michael, and now we have the Boston Dynamics dog...

05:41:50 Divya Chander: Like Elif, would love to stay in touch:
<https://www.linkedin.com/in/divyachander/>

05:41:59 Divya Chander: Thanks, Madhu, for always bringing wonderful people together.

05:43:03 Divya Chander: @Fio, those insects often form hive minds, which are a form of "expanded consciousness" by the definitions that we have arrived at.

05:43:16 Divya Chander: yes

05:43:17 Elif Keve: @divya thank you for link, I follow and message now

05:43:30 Samer El Sayary: <https://www.linkedin.com/in/samerelsayary/>

05:43:37 Samer El Sayary: Welcome to connect

05:47:11 Sina: Divya, we also use less than 5% of our conscious mind where most of what we do (above 95%) is subconscious driven.

05:48:49 Sina: Just very recently, we have robots that can now reproduce!

05:51:27 Divya Chander: @Sina, consciousness, conscious processing, and subconscious processing are not the same. One is utilization of networks, which changes in parallel, the other is the ability to connect to information outside the

organism, and the ability to make sense of it. Some of the distinction between conscious and subconscious is also artificial.

05:52:19 Divya Chander: @Sina, are you talking about the Xenobots? From *Xenopus laevis*? Yes, those are organic-inorganic hybrids to some extent. Not the first.

05:53:24 Sina: Yes, Divya, I am talking about *Xenopus laevis*!

05:54:08 Sina: Xenobots are less than a millimeter (0.04 inches).

05:58:48 Sina: I always thought subconscious mind gets its recording from the conscious thoughts which shapes our experiences and emotions and that it processes information in roughly 40 billion/s (with its impulses travelling at a up to 100,000 MPH). right? Are not the two subconscious and conscious minds interconnected?

05:58:56 Divya Chander: Yes to Frank White. Being in space and looking back on the Blue Pearl, and experiencing connectedness with the Universe changes out Consciousness forever. Former astronaut Edgar Mitchell founded IONS based on this transformation.

05:59:58 Divya Chander: @Sina, subconscious and conscious networks change their participation in networks depending on need, and take information both from peripheral stimuli, and from internally generated ones. No hard and fast rule.

06:02:01 Elif Keve: I gotta go, happy to see you all. see you at next events. keep contact <https://www.linkedin.com/in/elif-keve-893066b8/>

06:06:32 Sina: Dr. Madhu, I wish I had a chance to take your space architecture course with you when I was a PhD student at USC Dept. of Astronautical Engineering.

06:07:21 ravi Deepak: Thanks thanks, great discussions- enjoy warm holidays

06:07:31 Karen Grothe: Thank you to all the speakers! You have given me much to think about

06:07:37 Sina: Thanks for the info, Divya!

06:07:44 Divya Chander: Thank you so much, Madhu!

06:07:47 Divya Chander: Happy holidays to all.