

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS



LONG ISLAND SECTION

MAY 2020

VOL. XLVIII, No. 7

Published by and for the AIAA Long Island Section,
P.O. Box 491, Bethpage, NY 11714

OFFICERS:

Chairman: Dave Paris (516) 458-8593 davidsparis@twc.com
Vice-Chair: Greg Homatas (718) 812-2727 greghomatas@msn.com
Secretary: Nick DiZinno (631) 252-3440 dizinno@yahoo.com
Treasurer: W. Glenn Mackey (631) 368-0433 Glennfly@aol.com

COUNCIL MEMBERS:

Anthony Agnone, Joseph Fragola, Muhammad Hayan,
Peter Kontogiannis, John Lylegian, Ron McCaffrey,
Emil Schoonejans, Jason Tyll, and Gerry Yurchison

FLIER EDITORS:

Dave Paris, davidsparis@twc.com
W. Glenn Mackey, Glennfly@aol.com

FLIER PUBLISHER:

Nick DiZinno (631) 252-3440 dizinno@yahoo.com

SECTION WEBSITE:

<https://engage.aiaa.org/longisland/>
Webmaster: Nick DiZinno

Note from the Chairman

Due to the scheduling delays and chaos resulting from the Coronavirus infestation, the Long Island Section Council has decided to accept the recommendation of its Nominating Committee to not conduct an election this year, and instead reappoint all council members to their present positions for the upcoming year. Please let us know if you have a problem with this decision. If you would like to join the Council, we could appoint you to the one vacant position.

The coronavirus continues to affect many AIAA plans. The Long Island Section did not have March or April Section meetings. We have scheduled a Virtual May meeting. Please see announcement on the next page and sign up. Depending on how that goes, we may try to have a June Zoom meeting too.

AIAA headquarters has cancelled technical meetings, Congressional Visits Day, student conferences and other events.

Thank you,
Dave Paris, 516-458-8593 davidsparis@twc.com

The **coronavirus** (COVID-19) continues to spread. Please do everything you can to stay healthy. **Here is what the Centers for Disease Control (CDC) recommends** and what we urge you to do:

- If you're sick or feeling unwell, stay home
- Stay home as much as possible
- **Avoid crowds** as much as possible.
- Avoid non-essential travel by car, airplane
- Maintain 6-foot safety distances
- Make sure to cover your cough or sneeze with a tissue, then throw it away or cough or sneeze into your sleeve at the elbow
- Clean and disinfect things you use often like counters, bathrooms, and your cell phone
- Wash your hands often with soap and water for a minimum of 20 seconds
- Avoid contact with sick people
- If you have questions or start to feel sick, call your healthcare provider
- **Follow the guidance from the CDC.**
Questions? Go to: [coronavirus.gov](https://www.cdc.gov/coronavirus).

EVENTS CALENDAR

May 28, Zoom AIAA Section Meeting with Ms. Alice Bowman talking about the NASA New Horizons "Mission to Pluto and the Kuiper Belt." Details on page 2.

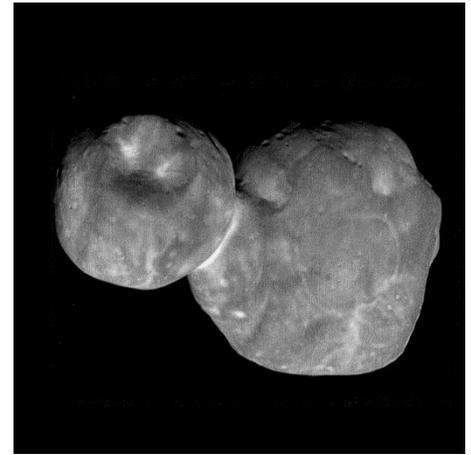
June 2, 9, 16, July 7, IISE Webinars. Details at <https://www.iise.org/Details.aspx?id=643>

June 3, ASME/ISA Meeting, Fracture Mechanics: Crack Tip Fields in Elastic-Plastic Materials. See page 3.

A June Zoom Section meeting is still possible.

The Council meetings will be virtual for next few months, but we would appreciate your suggestions.

So, watch this space for news of future meetings.



**AIAA/IEEE(AES)
Joint Section Meeting**

Thursday, May 28, 2017

Ms. Alice Bowman
AIAA Distinguished Lecturer
and Mission Operations Manager for NASA's New Horizons Mission
at Johns Hopkins University Applied Physics Laboratory

“Mission to Pluto and the Kuiper Belt ”

Location: Zoom Meeting online

Time: 6:00 PM Social Time
6:30 PM Presentation

RESERVATIONS REQUESTED
RSVP BY May 27, 2020
davidsparis@twc.com
or (516) 458-8593

Cost: Free for Everyone

Alice Bowman is the New Horizons Mission Operations Manager (MOM). In this presentation, she talks about the voyage of NASA's historic mission to Pluto and the Kuiper Belt, which culminated with the first flight past the distant dwarf planet on July 14, 2015 and on January 1, 2019, the first encounter with a Kuiper Belt object (KBO) "Arrokoth" (officially named 2014 MU69) approximately 4 billion miles from Earth. Both flybys revealed startlingly new information. She'll speak about this continuing journey through the eyes of the APL mission operations team and describe some of the technical, scientific, and personal challenges of piloting the New Horizons spacecraft across the solar system on its voyage to the farthest reaches of the planetary frontier. Ms. Bowman's team itself was part of history, operating a spacecraft that had to travel longer and farther than any mission ever to reach its main target.

Alice Bowman is a member of the Principal Professional Staff at the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, Maryland. She is the Space Mission Operations Group supervisor and the NASA New Horizons Mission Operations Manager (MOM). She supervises approximately 50 staff members who operate deep space and Earth-orbiting spacecraft, including NASA's TIMED, STEREO, New Horizons, and Parker Solar Probe. As the New Horizons MOM, Alice leads the team that commands and controls the spacecraft that made a historic close flyby of the Pluto system in July 2015 and continues deeper into the solar system's distant Kuiper Belt region. As part of the New Horizons team, she has received a number of NASA Group Achievement Awards and the 2016 SpaceOps Award for Outstanding Achievement.

Directions: Click on the link in the meeting invitation you receive after signing up for the meeting.



ASME/ISA LI Sections Technical Meeting and Seminar

**Fracture Mechanics: Crack Tip Fields in
Elastic-Plastic Materials**

Dorinamaria Carka, Ph.D

Assistant Professor, New York Tech

Wednesday, June 3, 2020

6:15 PM Check-In
6:30-8:30 PM Presentation

- Cost:** Attendance is free of charge for all attendees. There is, however, a cost if you wish to obtain PDH credits. See next.
- PDH Credits:** NSPE-NY Practicing Institute of Engineering, Inc. has approved this seminar for two Professional Development Hour (PDH) credits. P.I.E. will issue a two-credit certificate to attendees who pay a processing fee of \$35. If you wish to receive the PDH credits, **we must receive your check and registration info by June 1.** Make check out to ASME Long Island Section, and mail to Anthony Cacioppo, P.O. Box 1138, Huntington, NY 11743.
- Registration:** Non-credit attendees, please register by e-mailing Tony Cacioppo at tonycaci@aol.com. **All registrants**, please provide your name, daytime phone number, company, and society affiliation.
- Format** This is an online meeting using zoom. You must register to attend with an email address that you will use for the zoom meeting. To get PHD credits, you must attend the whole meeting which will be verified by checking attendance at the beginning and end of the meeting. You will be emailed a zoom invitation one day before the meeting.

Program Description – Fracture mechanics is the field of mechanics concerned with the study of the propagation of cracks in materials. It uses methods of analytical solid mechanics to calculate the driving force on a crack and those of experimental solid mechanics to characterize the material's resistance to fracture¹. This presentation will cover the historical development of fracture mechanics, concepts of linear elastic fracture mechanics (LEFM) and elastic-plastic fracture mechanics (EPFM) for crack mode characterization, stress intensity fields and validity of fracture criteria.

About the Speaker – Dr. Dorinamaria Carka specializes in computational solid mechanics, fracture, and modeling of multifunctional, smart materials such as ferroelectrics and ferromagnetics at different length scales. Her research focus has been on the computational modeling and fracture mechanics of ductile and ferroelectric materials. Prior to joining New York Tech's mechanical engineering department, Dr. Carka served as a postdoctoral scholar at the Translational Applications of Nanoscale Multiferroic Systems Engineering Center at the University of California at Los Angeles. She received her Ph.D. in engineering mechanics at the University of Texas at Austin, and her M.Sc. in mechanical engineering at the University of Thessaly in Greece.

1. https://en.wikipedia.org/wiki/Fracture_mechanics

JANUARY MEETING REPORT

Our last section meeting was held on January 14 at the Bethpage Public Library. We were honored to have AIAA Executive Director Daniel L. Dumbacher as our guest speaker. His presentation title was “The Future Starts With you – Now!” He has previously given this talk to AIAA sections, student branches, and companies. Because of the viral pandemic, we did not hold February, March, or April Section meetings.



AIAA is the world’s largest technical society dedicated to aerospace. Over the next six years, employment in Aerospace and Defense (A&D) is expected to grow by six percent. Recent aerospace college graduates have an unemployment rate of about 2.5 percent. The 2020 federal budget request for defense is 4.7% higher than the previous year. With the number of engineering students increasing, colleges need more aerospace faculty. These

are all encouraging for the aerospace industry, but there are many serious challenges ahead.

AIAA has three priorities for the future: air mobility and autonomous flight; transformative flight; and the space transportation economy. In the air mobility sphere, the opportunities are in automation and control/safety, public acceptance, design challenges, and defense applications. Hypersonics and electric aircraft power in commercial and defense applications are major areas of transformative flight. The space economy includes not only space exploration but also national security and potential economic growth from cislunar resources. It is estimated that there is 20 billion metric tons of water stored at the lunar poles and in deep craters. The current NASA plan is to send humans to land on the moon in 2024 with both commercial and private entities involved. What must be redesigned to deal with the planned moon mission 9-day return to Earth? For Apollo, return to Earth was only 3 days.

Dan continued by discussing a number of design challenges currently facing the USA. He said we have fallen behind in defense technology and must rebuild our lost lead. We must encourage public acceptance of private companies working on commercial hypersonics and NASA working on low noise sonic booms.

In the space economy arena, how will we obtain any of the 150 metric tons of precious metals on the 17,000 near Earth objects? And how to we design space robots to work in coordination with astronauts?

There is plenty of aerospace work to do. On Wednesday, May 27, SpaceX will try to launch two astronauts to the International Space Station. This will be the first US flight to the ISS in over 9 years.

Hypersonic airflow problems that must be addressed include vehicle design, sonic booms, air traffic control, and limited market size. As the number of space missions increases, space traffic management critical problems will have to be solved. Satellites should be de-orbited after their useful life ends. This is not currently enforced.

The interesting presentation was followed by a spirited question and answer session.

We were joined by meeting co-sponsors IEEE(AES) and IISE.

FEBRUARY MESC MEETING REPORT

On February 13, 2020, the Metropolitan Engineering Societies Council (MESC) which is a council of the various engineering societies in NYC held their annual National Engineers Week dinner/lecture. The dinner meeting was held at the Ukrainian East Village Restaurant in Manhattan's East Village. A total of 29 people attended including one speaker and two people who came just for the lecture.



Peter Kontogiannis, Sal Galletta, MESC professional development and Wasyl Kinach

The welcome was given by Wasyl Kinach, MESC Chair and the presentation of the NYC Mayoral Proclamation for National Engineers Week was given by our own Peter Kontogiannis of NYC DEP followed by an introduction of the keynote speaker by David Weiss, MESC Treasurer and IEEE representative.

Burton Dicht, IEEE Director Student and Academic Education Programs, gave an updated talk on the history of the space shuttle which included an overview of the NASA SLS/Orion and various commercial ventures. One PDH was awarded to attendees who signed the ASCE attendance sheet. Dinner was buffet style and included meatballs, baked ziti, salad, stuffed cabbage and pierogies with apple strudel for dessert.

During National Engineers Week, following the lecture which is the same week as the week that includes Presidents Day, the MESC has an engineers week banner with the logos comprising all of the engineering societies in NYC hung at the atrium of the Port Authority Bus Terminal. George Washington was the first President and was an Engineer/Surveyor. We celebrate National Engineers Week in honor of our country's engineers and their accomplishments.

If you missed the talk you may view it at: https://site.ieee.org/ny-monitor/files/2020/03/DICHT_From-Moonwalks-to-Spaceplanes-Feb-2020.pptx



Speaker Burt Dicht

Greg Homatas

COVID-19 Current Information

The United States now has more cases and deaths than any other country. New York States cases and deaths exceed all other states. New Jersey is now second.

Latest numbers at:

<https://ncov2019.live/>

	<u>March FLIER</u>	<u>May FLIER (May25)</u>
Total number of world cases:	561,965	5,560,461
Total number of world deaths:	26,725	346,557

Status in the USA

	<u>March 27</u>	<u>May 25</u>
Total number of cases:	96,968	1,689,179
Total number of deaths:	1480	98,334
NYS cases:	44,635	359,926
NYS deaths:	519	23,282

Total number of US unemployment applications over last 8 weeks: 36.8 million