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FLIER

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Note from the Chairman

We hope that you and your families are healthy and have not been severely affected by the COVID-19 pandemic, the Flu, or the RSV virus.

The Long Island Section wishes you and your families a very safe, healthy, and enjoyable Thanksgiving Holiday.

This FLIER lists a meeting announcement, information about NASA Artemis, and little else. We continue meetings in Zoom format. Please see meeting announcement on the next page and sign up. When things get safe enough, we will resume in-person meetings.

Very early this Wednesday morning, NASA once again is planning the launch of the first SLS/Artemis mission.

Please see details on pages 3 and 4.

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

EVENTS CALENDAR

November 17, AIAA Long Island Section Zoom meeting, Dr. Christopher Galea, "Direct Fusion Drive for Space Power and Propulsion."

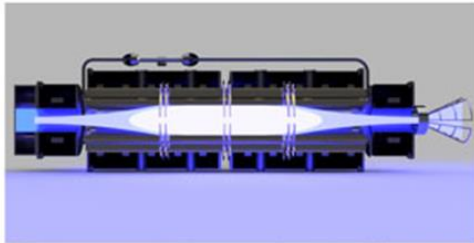
Details on page 2.

We have no additional meetings planned. But hope to resume meetings in January. If possible, we will have in-person meetings.

We would appreciate your suggestions for future section meetings. Please send suggestions for topics and/or speakers to davidsparis@twc.com or to any other member of the Long Island Section Council.

Watch this space for news of future meetings.

Infections and hospitalizations due to COVID-19 are not over on Long Island.
Please continue to stay safe from COVID-19.
Wear a good (non-cloth) mask whenever near other people.
Avoid crowds and non-essential travel.
Maintain 6-foot safety distances.
If not already vaccinated, get two doses ASAP.
If vaccinated, be sure to get two boosters plus the third booster.
Total USA deaths have now exceeded one million people and deaths continue to exceed 250 per day.
We think about and distress over this loss of life and loss of loved ones every day.



Courtesy of Princeton Satellite Systems

**AIAA/IISE/IEEE(AESS)
Joint Zoom
Section Meeting**

Thursday, Nov. 17, 2022

Dr. Christopher Galea

Research Scientist at Princeton Satellite Systems



Courtesy of Out Of This World Design for
Princeton Satellite Systems

“Direct Fusion Drive for Space Power and Propulsion”

Location: Zoom Meeting online
Link will be sent to those who register

Time: 6:30 PM Social Time
7:00 PM Presentation

RESERVATIONS REQUIRED

RSVP BY Nov. 16, 2022

davidsparis@twc.com

or (516) 458-8593

Cost: Free for Everyone

The Direct Fusion Drive (DFD) is a fusion rocket engine concept based on the Princeton Field-Reversed Configuration (PFRC) machine, a compact fusion reactor about the size of a minivan which uses a unique radiofrequency plasma heating method. The PFRC reactor scheme involves passing a cool plasma along the fusion region of the PFRC to collect the energy created from the charged fusion products. The DFD can generate propulsion by allowing this energy to escape as a plasma plume. By changing the flow rate in the cooling layer, the DFD can produce a range of thrusts and specific impulses for a given power level. The DFD can simultaneously produce electric power, allowing fusion power to be used for payload and communications and enhancing the scientific return of missions. The DFD allows deep space missions to fly directly to their destination rather than having to use complex gravity assists from other planets. In this talk, the physics and capabilities of the DFD for space power and propulsion will be discussed.

Dr. Galea received his bachelor's degree in Aerospace Engineering and Physics at the Massachusetts Institute of Technology in 2016. He joined Princeton Satellite Systems (PSS) after completing his Ph.D. in Mechanical and Aerospace Engineering at Princeton University in 2021. His dissertation work was on “Coherent Microwave Scattering from Laser-Generated Plasma in External Magnetic Field and Weakly Ionized Plasma Environments.” He has expertise in plasma diagnostics, short-pulsed lasers, and plasma physics. In his graduate research, he investigated the implementation of a laser- and microwave-based diagnostic technique, Radar REMPI (Resonance-Enhanced Multi-Photon Ionization), in novel environments relevant to plasma propulsion and remote sensing applications. A primary finding in his thesis was the discovery of magnetically induced depolarization of the microwaves when scattering from a small plasma in a magnetic field, which allows one to perform remote local vector magnetic field measurements. At PSS, he has been running the x-ray energy diagnostic on the PFRC-2 experiment and working on aerospace technology development, fusion power electronics, and plasma-circuit models. He is currently operating and analyzing the x-ray silicon drift detector diagnostic for electron energy distribution measurements. He is also working on developing a plasma-circuit model for capturing key effects of surrounding plasma on the power electronics being developed under Galvanizing Advances in Market-aligned fusion for an Overabundance of Watts (GAMOW).

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

Artemis to the Moon

- 2022 Artemis I: First flight of SLS and Orion, no crew (three mannequins)
 - Operations and flight modes of the rocket and the spacecraft
 - Reentry
 - Orion retrieval
- 2024 Artemis II: First crewed flight, around moon & beyond
 - Confirm deep space operation
 - Test Orion's life support, communication & navigation systems
- 2025 Artemis III: First Moon landing near South Pole
 - Very new terrain
 - Search for resources
 - Collect samples of ejecta
 - Start Moon base



SpaceX HLS

NASA ARTEMIS 1 MISSION



- Last time not launched September 3, 2022
- Supercooled Liquid Hydrogen leak not fixed
- NASA replaced leaky seals at the launch pad
- Fueling tested Sept. 17
- Replanned launch date: September 23 or 27, 2022
 - Needed a critical safety system waiver
 - SLS rolled back to VAB to avoid Hurricane Ian Sep. 26
 - SLS rolled out again November 4
 - Withstood hurricane Nicole on November 10
- Now, new launch date: November 16 1:04AM
 - With 2-hour launch window
 - Subject to weather good enough

Watch launch at: <https://www.nasa.gov/nasalive>

or at: <https://www.youtube.com/watch?v=CMLD0Lp0JBg>

And if you are still up,

At 4 a.m. – Artemis I post-launch news conference (time subject to change)

AIAA Long Island Section Council Election Results

The offices filled were:

Long Island Section Chairman: David Paris

Long Island Section Vice-Chairman: Gregory Homatas

Long Island Section Treasurer: Col. W. Glenn Mackey

Long Island Section Secretary: Dr. Nicholas DiZinno

Members of Long Island Section Council:

Dr. Anthony Agnone

Dr. Joseph Fragola

Muhammad Hayan

Peter Kontogiannis

Dr. John Leylegian

Dr. George Papadopoulos

Emil Schoonejans

Dr. Jason Tyll

Dr. John Vaccaro