In this Issue…

Chair Chat

St. Louis Section Chair – Dr. Sanjay Jayaram

Hello everyone! I am Dr. Sanjay Jayaram, Associate Professor at Saint Louis University and I am excited and honored to assume the role of Section Chair for the 2021-2022 year. I am looking forward to leading this section with alongside an outstanding council members listed below:

- **Vice Chair** – Charles Svoboda
- **Treasurer** – Alex Herzog
- **Secretary** – Chi Hou Lei
- **Advisors** – Srikanth Gururajan, Chris Tavares, James Guglielmo, Abigail Sevier
- **Region V Representative** – Mark Kammeyer

First, I would like to thank Mark Kammeyer, the past chair of the section for doing an outstanding job in the most difficult of times. The pandemic has tested our will and resolve repeatedly over the past eighteen months and with Mark's great leadership, the section did amazing work. To the testament, dedication and hard work, the section won several awards for the 2020-2021 year, namely:

- **Outstanding Section** – Mark Kammeyer
- **Membership Award** – Alex Friedman
- **STEM K-12 Award** – Jackie Blumer
- **Section-Student Branch Partnership Award** – Charles Svoboda
- **Young Professional Activity Award** – Stephen Clark

This is the reason why the Saint Louis Section is great with all these dedicated volunteers.

Wings of Hope, a non-profit humanitarian aviation organization, here at Saint Louis hosted the AIAA Saint Louis Section to conduct our section planning meeting in July 2021. Wings of Hope is a non-profit organization, making a huge impact on people's lives, across the globe, through the power of aviation. They provide free medical air transport services for people in need as well as supplies transportation to remote areas of the world. The organization works within USA and in several countries, partnering with local communities on programs improving health care, education and food security.

Photos courtesy of Carmelo Turdo, of The Aero Experience, http://aeroexperience.blogspot.com/

During this meeting, the section planned next year's activities and we are initializing several new programs for the local community, including new scholarships to aerospace undergraduate students and supporting aerospace senior design projects.

We have some exciting events coming up this year, so please keep an eye on the announcements and the newsletters. We are following the advice of the local ordinances in conducting in-person events and I am looking forward to and hope that our members will attend our fun social activities and volunteer time for our important outreach efforts.

I want to ensure that our members get the experience they want out of their AIAA membership and activities of the council. So, please don't hesitate to reach out to me if you are interested in volunteering opportunities or if you would like to be more involved.

I am looking forward to working with you all and we are going to have a fabulous year.

Thank you

Sanjay Jayaram, Ph.D.

Career Workforce Development Chair Opening on the AIAA St. Louis Section Council

The St. Louis Section has the Chair position open on its Council for the Career Workforce Development Committee. The Career Workforce Development Committee is responsible for planning and implementing programs and activities that can assist an engineer's career.

If you are interested, or would like additional information about this role, please contact Dr. Sanjay Jayaram, at *sanjay.jayaram@slu.edu*.

History in Aviation: August & September

Historian - Colin Thiele

1 August 1955 – The Lockheed U-2 has its first flight. The planned official first flight was scheduled for August 4, but during a high-speed taxi test on August 1, the plane became airborne.

19 August 1907 – Archie William League is born. While the date is not significant, Archie's story in aviation history in St. Louis is. The St. St. Louis Airport hired him as the first Air Traffic Controller in the United States in 1929; he used a checkered flag for 'GO' and a red flag for 'HOLD'

August 1928 – St. Louis voters approve a $2 million bond for airport improvements. The improvements include buying the current airport property from Major Lambert and building paved runways, taxiways, apron areas, hangers, and support facilities.

4 September 1922 – Jimmy Doolittle becomes the first person to fly transcontinental in the US in under 24 hours – with just 1 refueling stop in his DH-4 aircraft.

18 September 1948 – The Consolidated Vultee (Convair) XF-92A makes its maiden flight from Muroc Army Airfield in California (now Edwards Air Force Base). The XF-92A was the first delta-winged turbojet aircraft to take flight.

30 September 1968 – The first Boeing 747 emerges from the newly built factory made specifically for the 747 in Paine Field, WA.

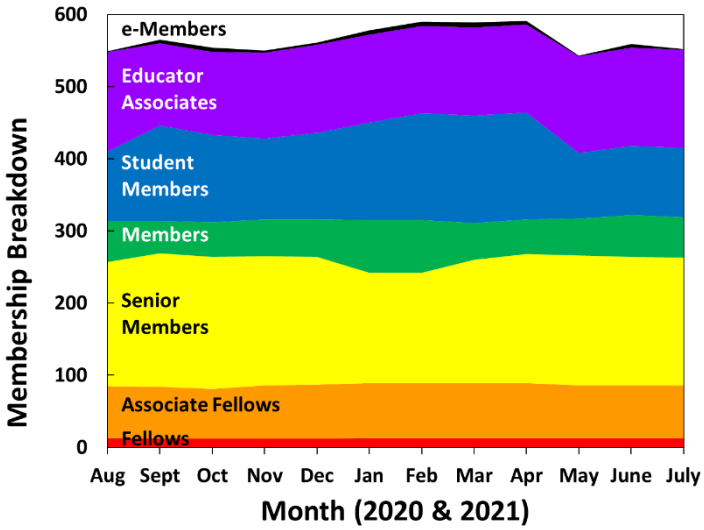
Membership Report

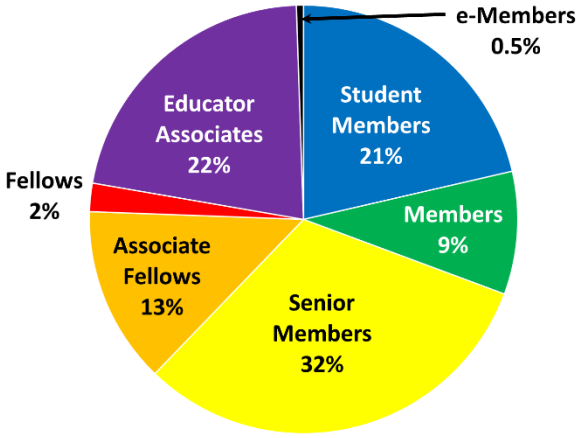
Alex Friedman – Membership Chair

The Section membership is at 549 members. The distribution breaks down as shown in the table and charts below.

- **Status:** Student membership dropped off in May, with no corresponding increase in the regular membership status.
- **Reminder:** New Member Event likely in October.

Type	July	August	Change
Professional	**320**	**315**	**-5**
e-Members	1	1	0
Members	56	57	+1
Senior Members	177	172	-5
Associate Fellows	73	72	-1
Fellows	13	13	0
Student Members	**96**	**96**	**0**
Educator Associate	**136**	**138**	**+2**
Total	**552**	**549**	**-3**





If you want to help someone get connected with AIAA events in St Louis, please pass along a couple of social media groups related to our St. Louis Section. We advertise our events on Facebook through the group "*I Fly St Louis*" and through the Boeing inSite group "*AIAA – St Louis Section*". Both of these groups are free to join and do not require AIAA membership. Please feel free to forward any membership questions to *Alex Friedman*.

Making a Change?

Are you graduating and moving? Planning to retire soon? Making a career move? If you are leaving the St. Louis Section area, please update your AIAA profile, so you will continue to receive accurate AIAA correspondence. Go to "My AIAA" (*http://www.aiaa.org/myAIAA*) log in, go to "My Account" and select "Edit Contact Info."

Education & College Outreach

Charlie Svoboda – Chair

In July, Charlie Svoboda, Mark Kammeyer & Abby Sevier met in-person and virtual with the Engineering Department chairs of the following schools that have AIAA Student Branches: Saint Louis University (Sanjay Jayaram), Washington University (Philip Bayley), Missouri Science & Technology (David Bayless), and Missouri University (Bill Ma).

The AIAA St. Louis Section will provide $1000 / year for a scholarship that the departments will administrate and $500 / year to support Design Competition Teams. The AIAA St. Louis Section also offers to provide:

- Speakers and food for student branch meetings
- Student focused section meetings
    - New member meeting
    - Student design team presentation meeting in the late spring
    - Share professional speakers between the section & branches
    - University aerospace research & graduate student programs meeting
- Other student activities
    - Lab tours at Boeing in St Louis
    - Student leadership seminar for AIAA branch officers
- Mentors, student design competition and senior project advisors and judges

If you are interested in helping with this effort, we are looking for a new education chair (since Charlie needs to focus on his Vice-Chair duties) and liaisons for each of the schools we support. We are interested in young professionals, more senior professionals, and retirees. This effort is all about strengthening the relationship ties between the generations. Please contact *Charlie Svoboda* or *Dr. Sanjay Jayaram* if you are interested.

The next steps for the Education & College Outreach Committee are to meet with the student branch leadership teams in September and hold a student leadership seminar in October.

Aerospace Link of the Month

Op-ed | Space Tourism's Environmental Price Tag, by Leo Mondale — August 21, 2021

https://spacenews.com/op-ed-space-tourisms-environmental-price-tag/

Virgin Galactic's VSS Unity performs a burn during July 11 flight. Photo Credit: Virgin Galactic

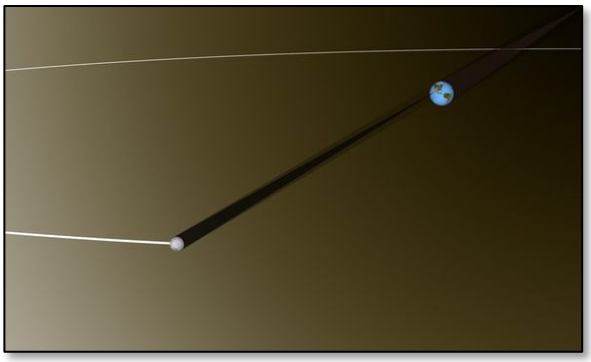
This article originally appeared in the August 2021 issue of SpaceNews magazine.

STEM Corner

STEM Chair- Jackie Blumer

STEM Corner Activity – Modeling the Earth Moon System:

- **Overview:** Students compare month-to-month analog or digital measurements collected during multiple full moons.
- **Background:**
  - Earth and the Moon are an average of 384,400 kilometers (238,855 miles) apart, but when we see them in pictures online or in print, the distance and size may not be to scale. They may appear close together, giving the impression that they are not very far apart. In reality, the reason they're often portrayed in such a way is because of the great distance between them. Often, showing their actual distance means excluding certain details – and sometimes can't be reasonably done within the size of an image.



  - To get a sense of the distance between the Moon and Earth, consider this: When astronauts traveled to the Moon and back in the '60s and '70s, it took three days in each direction, and their craft reached speeds of nearly 40,000 km/h (25,000 mph)! Since most students will not have a sense of how fast that is, follow that example with a more familiar speed. At freeway speeds, it would take more than five months to drive that same distance.
  - Creating a model of the Earth-Moon system is one way to accurately represent the scale size of Earth and the Moon, as well as the distance between them.

NASA Link: https://www.jpl.nasa.gov/edu/teach/activity/modeling-the-earth-moon-system/

March 15th Trivia Contest Answer

As mentioned in the May 2021 newsletter, question #5 in the G-BOND category and its answer from the March 18th annual New Member's / Trivia Contest event is as follows:

- **Question:** What Bond movie featured the aircraft type shown at the right? Bonus for naming the aircraft type.
- **Answer:** The movie was ***Thunderball***, and the aircraft type was the British Avro Vulcan Strategic Bomber. This is the aircraft type that bombed the airfield at Port Stanley during the Falkland's War.

No one got this question correct during the March Trivia event.

Young Professionals

Young Professionals Chair- Steve Clark

The 2020-21 year was a productive one for the Young Professionals committee, despite the hurdles we all faced due to COVID-19 (anyone tired of Zoom yet?). In March, the YP committee hosted a **Career Development Panel Discussion** – providing Young Professionals the opportunity to listen and learn from 4 distinguished Boeing technical and management leaders. This was followed up in May with a first – the inaugural **Young Professionals Technical Forum**. This event paired Young Professionals with members of the **Boeing Technical Fellowship** to develop technical presentations which were then presented to a mixed audience of young professionals, management, and seasoned technical engineers. The year culminated with the committee being announced as the three time running 1st place national Large Section winners of the **Young Professionals Activity Award** – a well-deserved tribute to the hard work and engagement from the many young professionals involved in the St. Louis section!

Additionally, the YP committee has grown from a committee of 1 to a high-powered, well-oiled committee of **3**! Welcome **Dan Donahue** (Boeing Aerodynamic Stability and Control) and **Jessica Smith** (student at St. Louis University and Boeing Intern)!

Looking ahead to the 2021-22 year, the committee is looking forward to hosting more events which will engage and benefit Young Professionals from around the region. Planning for the 2nd annual **Young Professionals Technical Forum** (*Call for Presentations coming soon* – start thinking about what you want to present!) and 3rd annual **Career Development Panel Discussion** are in work. And while the COVID-19 pandemic doesn't look like it will be disappearing in the near future, we are looking forward to the possibility of responsibly hosting networking events in accordance with local health guidelines and mandates again – including our **Young Professionals Fall Social** this **Wednesday, September 1st** (see flier at end of this newsletter). It should be an exciting year!

Technical Specialist Meetings

Technical Specialist Chair – John Schaefer

Our first Technical Specialist meeting of the year will take place on September 21. Dr. Dave Riggins, professor at Missouri S&T, will be presenting about *Drag and Heat Transfer Effects on Hypersonic Vehicles in Close-Proximity Flight*. We will have both an in-person and virtual option for this meeting, and RSVPs are due by September 17. Please see the flyer at the end of this newsletter for more information.

AIAA St. Louis Section Twitter Account

The AIAA St. Louis Section now has a Twitter account! Please follow us at @StLAIAA

Upcoming Events

Program Chair – Bob Dowgwillo, Technical Specialist Chair – John Schaefer

Date	Information
Wednesday, 1 September 4:00 PM CT Young Professionals 2021 Fall Social (In-Person)	Come network with other young professionals in the St Louis region at McGurk's! This is a great opportunity to meet other professionals outside your day-to-day work groups and learn how you can get involved with AIAA! Students and non-AIAA members welcome. Light appetizers will be provided. **Location:** John D. McGurk's – Soulard, 1200 Russell Boulevard, Saint Louis, MO 63104
Saturday, 18 September 12:30 PM CT AIAA LA-LV Section e-Town Hall Meeting (Virtual)	**Presenter:** Jim Guglielmo, Boeing Research & Technology **Title:** *MDAO Lessons-Learned & Best Practices* **Abstract:** MDAO models for Conceptual Design have evolved over the years from being first focused on Flight centric lower-order analysis codes (e.g. Geometry, Mass Properties, Aerodynamics, Propulsion, Aero-Performance), to the coupling of additional disciplines (e.g. affordability, structures, subsystems, mission effectiveness) at varying levels of fidelity. This expansion in capability has followed the successful adoption of MDAO as an accepted and now expected part of the normal vehicle design process, and recognition of MDAO as a critical enabler for reducing program technical risk, delivering first-time quality, and Model-Based Engineering. This presentation will focus on best practices and lessons-learned from both the development of MDAO models and the application of MDAO on programs within Boeing. **Registration at the Following Website:** *http://events.r20.constantcontact.com/register/event?llr=p9tbt6cab&oeidk=a07ei7xnsjk75e41320*
Tuesday, 21 September 5:00 PM CT Technical Specialist Meeting (In-Person)	**Presenter:** Dr. Dave Riggins, Professor at Missouri S&T **Title:** *Drag and Heat Transfer Effects on Hypersonic Vehicles in Close-Proximity Flight* **Abstract:** A methodology is described for assessing the utilization of available on-board energy for an aerospace vehicle in terms of realized performance. Applications of the method are shown for an acceleration/climb mission of an air-breathing hyper-sonic vehicle, as well as a cascade of multiple trailing (following) rocket-powered vehicles at Mach 10. Entropy generation in the lead vehicle wake is eight times the total entropy generation in and over the vehicle; but only 15% of the overall initially available energy goes into productive acceleration and climb. By leveraging this excess energy, trailing vehicles can experience less than 20% of the drag and heat transfer experienced by the lead vehicle. **RSVP by September 17**: *https://form.jotform.com/212356384453154*
Tuesday, 12 October 5:00 PM CT Technical Specialist Meeting (In-Person)	**Presenter & Title:** TBD
Thursday, 28 October 5:00 PM CT Dinner Meeting	**New Members Evening with Air & Space Trivia**

AIAA St. Louis Section Council

Office	Officeholder	Telephone	Email
Chair	Sanjay Jayaram	----	sanjay.jayaram@slu.edu
Vice Chair	Charles Svoboda	314-545-2363	charles.svoboda@boeing.com
Secretary	Chi Hou Lei	----	chihou.lei@slu.edu
Treasurer	Alec Herzog	314-545-5219	alec.n.herzog@boeing.com
Advisor	Jim Guglielmo	314-452-1271	james.j.guglielmo@boeing.com
Advisor	Srikanth Gururajan	314-977-8355	srikanth.gururajan@slu.edu
Advisor	Abby Sevier	425-614-5135	abigail.e.sevier@boeing.com
Advisor	Chris Tavares	314-777-4663	christopher.m.tavares@boeing.com
Region V Rep.	Mark Kammeyer	314-234-9497	mark.e.kammeyer@boeing.com
Committee	Chair	Telephone	Email
Career Workforce Development	TBD - Vacant	----	----
Communication	John Shultz	314-563-6570	john.c.shultz@boeing.com
Education & College Outreach	Charles Svoboda	314-545-2363	charles.svoboda@boeing.com
History	Colin Thiele	608-778-6438	Colin.thiele@slu.edu
Honors & Awards	Patrick Padilla	314-232-9349	patrick.a.padilla@boeing.com
Membership	Alex Friedman	636-206-9196	alexander.friedman@boeing.com
Newsletter	Jim Guglielmo	314-452-1271	james.j.guglielmo@boeing.com
Programs – Dinner Meetings	Bob Dowgwillo	314-234-1013	robert.m.dowgwillo@boeing.com
Programs – Tech Specialist	John Schaefer	314-232-9331	John.a.schaefer3@boeing.com
Public Policy	Frank Youkhana	314-234-4811	frank.w.youkhana@boeing.com
Retirees	Ray Cosner	----	ray.cosner@outlook.com
Service Projects	Brad Sexton	314-232-7826	bradley.w.sexton@boeing.com
STEM	Jackie Blumer	----	jblumer@bccu2.org
Strategic Planning	Larry Brase	314-234-4907	lawrence.o.brase-jr@boeing.com
Webmaster	Jim Guglielmo	314-452-1271	james.j.guglielmo@boeing.com
Young Professionals	Stephen Clark	314-545-9509	stephen.f.clark3@boeing.com

If you are interested in joining one of the committees, please contact the AIAA St. Louis Section Chair, Dr. Sanjay Jayaram, or the committee chairperson.

American Institute of Aeronautics and Astronautics
St. Louis Section

Wednesday, September 1, 2021

John D. McGurk's - Soulard
1200 Russell Boulevard,
Saint Louis, MO 63104

Young Professionals 2021 Fall Social

Learn how to get involved with AIAA YP and other committees!

Network with aerospace professionals in the St Louis region!

Come network with other young professionals in the St Louis region at McGurk's! This is a great opportunity to meet other professionals outside your day-to-day work groups and learn how you can get involved with AIAA!

Students and non-AIAA members welcome – bring a friend!

Provide inputs to future YP events!

Schedule	Menu	Tickets
4:00-6:00 Social/ Networking	Light Appetizers	Free

Reservation by Monday, August 23
Send reservation by jotform
Contact Jessica Smith for questions
*RSVP's appreciated, but not required

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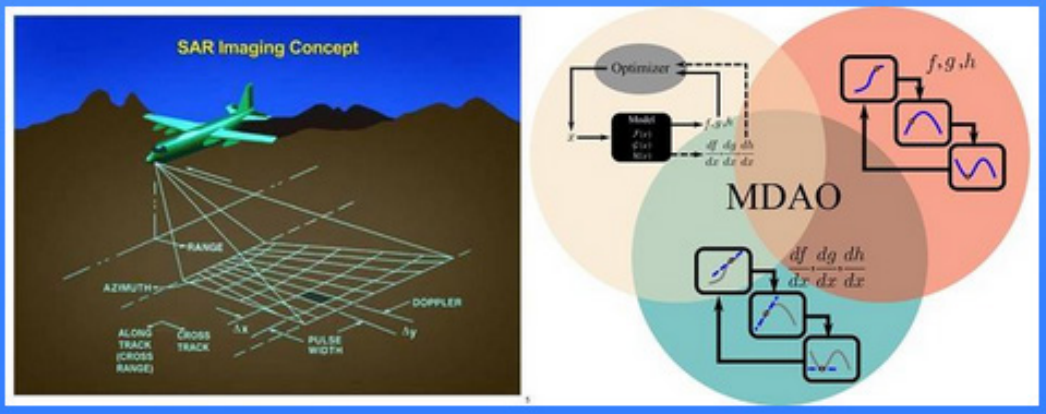
Website:
http://events.r20.constantcontact.com/register/event?llr=p9tbt6cab&oeidk=a07ei7xnsjk75e41320

AIAA American Institute of Aeronautics and Astronautics
Los Angeles - Las Vegas Section

AIAA LA-LV Section e-Town Hall Meeting
(1) Space Technology & RADAR Applications
(2) MDAO Lessons-Learned & Best Practices

Saturday, September 18, 2021, 9am-12pm PDT (US/Canada) (GMT-0700)
An AIAA LA-LV Zoom Webinar / Online Section Meeting



9 AM PDT (GMT-0700)
Space Technology & RADAR Applications
by
Dr. Sudhir Kumar Chaturvedi
Associate Professor and Placements Internship Coordinator,
Department of Aerospace Engineering, UPES Dehradun, India

10:30 AM PDT (GMT-0700)
MDAO Lessons-Learned & Best Practices
by
Mr. Jim Guglielmo
AIAA Associate Fellow
Manager of the Vehicle Design,
Analysis and Optimization Group,
Boeing Research & Technology

American Institute of Aeronautics and Astronautics

St. Louis Section

Tuesday, September 21, 2021

Boeing Bldg. 100 Briefing Center

6300 James S. McDonnell Blvd

Berkeley, MO 63134

A virtual option will also be available

Drag and Heat Transfer Effects on Hypersonic Vehicles in Close-Proximity Flight

Presented by Dr. Dave Riggins, Professor at Missouri S&T

A methodology is described for assessing the utilization of available on-board energy for an aerospace vehicle in terms of realized performance. Applications of the method are shown for an acceleration/climb mission of an air-breathing hypersonic vehicle, as well as a cascade of multiple trailing (following) rocket-powered vehicles at Mach 10. Entropy generation in the lead vehicle wake is eight times the total entropy generation in and over the vehicle; but only 15% of the overall initially available energy goes into productive acceleration and climb. By leveraging this excess energy, trailing vehicles can experience less than 20% of the drag and heat transfer experienced by the lead vehicle.

Dr. Dave Riggins is a Curators' Distinguished Teaching Professor at Missouri S&T. He has had long-standing and extensive collaborations and research relationships with NASA, the DoD, and industry. His specific areas of expertise include analysis and design of propulsion systems for hypersonic air-breathing and rocket-powered vehicles, innovative techniques for drag reduction and thrust enhancement, and second-law characterization of aerospace vehicle performance. He has served as Associate Editor for the AIAA Journal of Propulsion and Power and has organized numerous workshops, primarily under the auspices of JANNAF. Dr. Riggins has received numerous professional and teaching-related awards and honors in his career, including the 2015 State of Missouri Governor's Award for Excellence in Education. He is an Associate Fellow of AIAA.

Schedule		Menu	Ticket Price
5:00 – 5:30	Sign-in / social	Sandwiches and Light Refreshments	Free
5:30 – 6:30	Presentation		
6:30 – 7:00	Q&A		

RSVP by September 17 using our Jotform

https://form.jotform.com/212356384453154

Contact John Schaefer for questions

MISSOURI S&T

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