



Experimentally Speaking...

VOLUME 16 | ISSUE 1

APRIL 2025 | SEM.ORG

Message from the President



Jason R. Blough, SEM President, 2024-2025

GREETINGS FROM THE GREAT White North. Yes, we are still getting new snow up here in my hometown of Houghton, MI. While we are colder than we would like up here, I heard that IMAC was a great time and had a warm reception for all of the attendees. I was very sorry to miss it this this year. Unfortunately, I couldn't attend for personal reasons. I very much missed getting together with many old and new friends and discussing technical work as well as how we are all doing personally. Some of my best friends attend IMAC every year, which is one reason it is so special to me. I hope you have the same types of experiences at IMAC or the Annual Conference every year. They really are special events to attend for so many reasons.

This year we had 556 attendees, 33 exhibiting companies and three courses offered (with 61 attendees between all three IMAC courses). Another very successful conference, which, as I wrote about in my last newsletter, is very important to SEM. THANK YOU for attending if you made it to the conference.

We had a successful student ice breaker reception lead by the two Student Ambassadors. What a great experience for the ambassadors and a great thing to add to their resumes. I ask that you nominate your students to be a Student Ambassador if you bring them to a conference. Being a Student Ambassador isn't that much work and all of the students genuinely seem to enjoy the events that they plan. I think these events and the Ambassadors really send home the message with the attending students that we are a friendly organization and hopefully convinces more students to return as professional members in the future. I heard that many attendees, over

“The New/Young Engineer program continues to be a popular event and will be celebrating its 25th year at IMAC 44”

300 strong, will agree that the highlight of the conference was the IMAC social event where the crowd cheered on brave colleagues who demonstrated their bull riding prowess. There was also a Women in Engineering Game Night.

The New/Young Engineer program continues to be a popular event and will be celebrating its 25th year at IMAC 44. IMAC featured a joint meeting of the Applications, Education, and Research Committees giving an opportunity for IMAC and Annual participants to collaborate. Mike Todd hosted a panel on academic careers where a full room of young researchers picked the brains of faculty members who shared their career experiences through industry, national labs, and academic career milestones. The well attended Technical Division meetings gave a great start toward another full technical program at IMAC 44.

We also welcomed Matt Allen, who started his term as IMAC Conference Director and thanked David Epp for his service as IMAC

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Conference Director for the past three years. Thank you David, wish I had been there to thank you in person - you did a GREAT job over the last three years.

Nuno has started to work with the member database to understand who our membership and conference attendees are. A few interesting facts from IMAC - over 80% of the attendees are from the U.S.. I would have actually guessed that number to be higher! I would like to sincerely recognize those who travelled from out of the country to attend. I know that takes much more effort than for those of us who live in the US. Please know your contributions and attendance are valued and I hope you feel it is worth your time and money to return again in the future. You do make a difference with your contributions and presence and it's always interesting to hear different viewpoints. Only about 50% of the attendees were SEM members. Again, as I discussed in my last letter, we would really

like to see that number go up. So for those of you that aren't members, what can we do different to convince you that joining SEM is a great value proposition? We will continue to try to understand more about our membership and attendees and hope to be able to develop some actions to improve membership and conferences.

At the SEM office, everyone is working hard to put together another GREAT Annual Conference. If you receive a communication or request from Jen or Shari, please respond in a timely manner and make their jobs easier and more efficient. The office staff work very hard to make sure that we as conference attendees have a great experience and most importantly, enjoy ourselves. So please thank them when you see them or respond to a request from them.

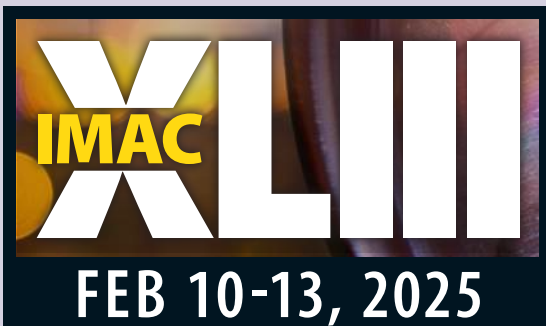
I hope to see many of you at the Annual Conference and again, thank you for your support of and participation in SEM

conferences, journal contributions, and the service work that many of you do to make us successful.

As this is the last newsletter that I have to write as President this year, I would like to thank you for the opportunity to serve you. The year passed much too quickly and I unfortunately did not get to spend as much time as I had hoped moving SEM forward. I am sorry for that. I do look forward to working with the next leadership team and am confident that Dr. Junlan Wang, President Elect, will do a great job and continue to move SEM forward. Again, I was sorry to not be able to attend IMAC to meet with many of you. I do look forward to attending Annual to see many of you as well.

Thank You!

Jason Blough | SEM President 2024-25 ■



By the Numbers...

625
TOTAL PARTICIPANTS

33
EXHIBITORS

151
PHOTOS/VIDEOS
SHARED THROUGH
THE WHOVA APP

197
First-Time Attendees

3 PRE-CON COURSES
61 COURSE ATTENDEES

\$1500
WORTH OF AMAZON GIFT
CARDS AWARDED THROUGH
THE PASSPORT PROGRAM

496
SESSIONS



318
Attendees
partook in the
PBR Cowboy Bar
social gathering



Message from the Director

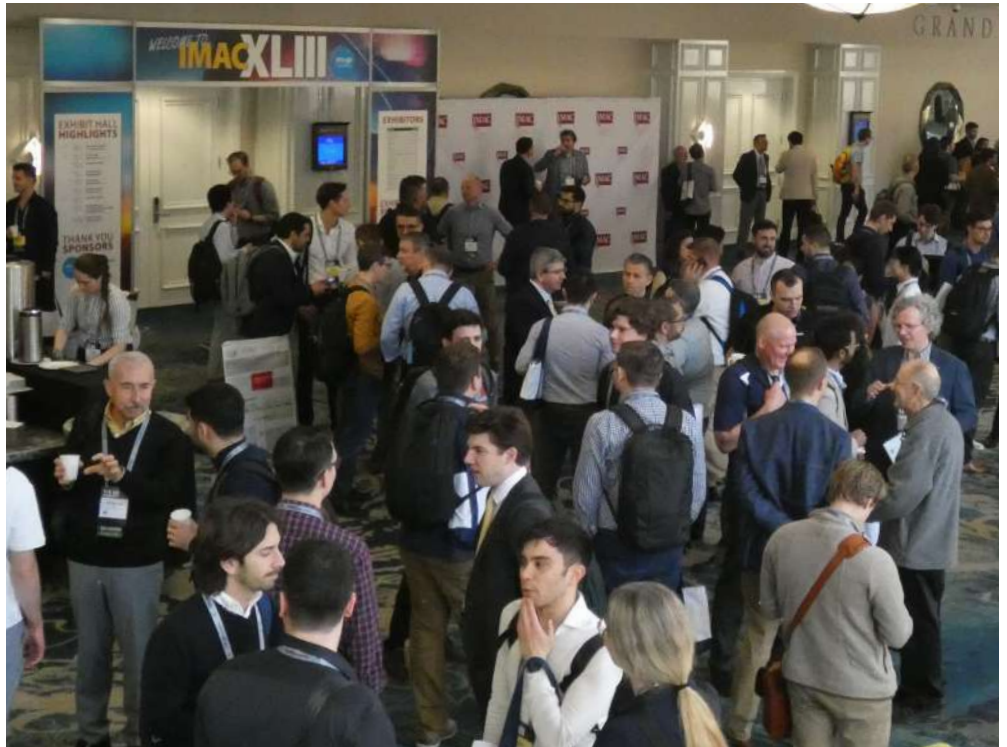
IMAC-XLIII WAS HELD at the Rosen Plaza Hotel in Orlando, Florida from February 10th to 13th, 2025.

With more than 625 participants, 2025 proved to be one of our highest attendance years since before the pandemic. Paid attendees comprised most of the participants at 556 and 14 guests. Out of the 556, 197 were first time attendees and 148 were students.

Attendance continues to be driven by the strength of the technical program at IMAC. We have the IMAC Advisory Board, Program Planning Committee, session organizers and Technical Division chairs to thank for putting together an outstanding technical program.

Course attendance was robust with more than 60 attendees for the three offerings. These included Operational Modal Analysis: Background, Theory & Practice, a two-day course instructed by Palle Andersen and Carlos E. Ventura. Modal Domain Approaches for Nonlinear Identification and Analysis in Industry instructed by H. Nevzat Özgüven, Ben Pacini and Matthew S. Allen. And Optical Techniques for Experimental Modal Analysis instructed by Dan Rohe, Bryan Witt and Phil Reu.

Our two speakers garnered a good audience for their conference wide keynotes. Dr. Aydogan Ozcan of California NanoSystems Institute, UCLA presented "Diffractive Optical Processors for Monitoring Structural Health." And Dr. Michael A. Sutton of the University of South Carolina presented "StereoDIC Fundamentals and Relevance in Modal/ Dynamics Studies."



In addition to courses, tutorials, the technical program and several meetings, attendees also had a chance to unwind and have some drinks and appetizers during our Wednesday evening social event which proved to be entertaining with many participating in the mechanical bull riding at PBR Orlando.

If you were one of the 600+ attendees of this successful IMAC, I would like to graciously thank you for your participation in sharing your work and research. I would especially like to thank the technical program organizers, technical division chairs, track chairs and sessions chairs for all their hard work in putting together an amazing program.

We look forward to another gathering for IMAC-XLIV taking place in Palm Springs, California at the Riviera Resort & Spa Palm Springs January 19th through 22nd of 2026.

Information on our next IMAC, and much more, can always be found at sem.org/imac.

I look forward to any questions, comments or suggestions you may have.

Nuno Lopes | Executive Director ■

2025 SEM Annual Pre-Conference Courses

We look forward to seeing you at 2025 SEM Annual in Milwaukee, WI. Enhance your Conference experience by attending the following pre-conference course. Got to www.sem.org/annual to register and make the most of your SEM Annual experience.

Course Title:

Machine Learning for Mechanics

Course Description:

This course will introduce the basics of machine learning (ML) with an emphasis on its use in mechanics and related material science applications. The course will cover terminology, ML objectives/tasks, common ML algorithms, examples of ML, and approaches to evaluating ML-related work. The course will also offer hands-on exercises using ML on real data.

Course Outline:

- Introduction to Machine Learning:
 - Types of ML
 - Terminology
 - ML Tasks in Mechanics
 - Overview of Different ML Algorithms and Common Uses
 - Basic Examples of ML on Data
- Evaluation of ML in Mechanics
(become a better reviewer and user of ML in mechanics)
- Examples of ML in Mechanics
- Skill Building Exercises using student-supplied laptops

Instructors: Sharlotte Kramer, Marco Rossi, Jean-Charles Stinville, Neal Brodник, Michael Maclsaac

Date/Time: Sunday, June 1, 2025 | 9:00 a.m. – 6:00 p.m.

Cost: The regular course fee is \$500 and the student fee is \$250. Course fee includes lunch, course handout material, and refreshment breaks. Lodging and additional food or materials are not included. All course registrants must pay the applicable course fee.

Cancellation Liability: If the course is cancelled for any reason, the Society for Experimental Mechanics' liability is limited to the return of the course fees. ■

2025 SEM ANNUAL



JUNE 2–5, 2025 | HYATT REGENCY MILWAUKEE | MILWAUKEE, WI

Course Title:

Thermographic Approaches for Rapid Fatigue Characterisation and Damage Detection

Course Description:

Following the success of short course on Thermal NDE at the SEM Annual Conference in 2024 that provided a general overview of techniques, the Thermomechanics and IR Imaging Technical Division of SEM is pleased to announce a new short course. Its objective is to provide the theoretical foundations and basic knowledge required to correctly apply rapid methods for the fatigue characterisation of materials. This represents the second in a series of planned short courses that the Technical Division leads.

Structural longevity and integrity depend on material properties – specifically, the weakening, damage, and failure under fatigue. Thermographic methods allow accelerated testing, offering a highly effective tool for detecting changes in material behavior under repeated and incremental cyclic loading, identifying early-stage damage, and potentially monitoring it.

In-situ damage quantification of components in industrial applications, such as cracks, thermal expansion, and additional forms of cyclic loading, benefit from both thermography and thermometry. Furthermore, temperature can be used as a proxy for energy transfer during irreversible events, enabling the quantitative analysis of structural materials through temperature-dependent properties and temperature-related parameters.

The course is stand-alone and open to anyone, and is of interest to students, researchers and practitioners alike. The course instructors are world leading academics in the field of thermographic inspection and analysis.

Instructors: Janice Barton, Umberto Galietti, Suhasini Gururaja, Rachael C. Tighe, Rosa De Finis

Time	Session Title	Duration	Instructor*
8:30 - 9:30 a.m.	Introduction to instructors and round table from delegates.	1hr	RDF, SG, RCT, JMB, UG
9:30 - 10:30 a.m.	Thermodynamics of irreversible processes: Presentation of the basic theory alongside some practical considerations for using thermomechanics to predict material behavior.	1hr	JMB
10:30 - 11:00 a.m.	Coffee Break	30min	-
10:30 - 11:30 a.m.	Heat sources Reconstruction: a detailed description of techniques to extract heat sources from temperature data.	1hr	RCT
11:30 a.m. - 12:30 p.m.	Self-heating phenomenon: the use of thermography for rapid fatigue testing and temperature-based approaches for estimating fatigue life and predicting damage in materials	1hr	RDF
12:30 - 1:30 p.m.	Lunch	1hr	-
1:30 - 2:30 p.m.	Selection of the most appropriate technique for assessing material behaviour	1hr	UG
2:30 - 3:30 p.m.	Procedures for fatigue limit estimation: Composites/AM/Classic materials	1hr	SG
3:30 - 4:00 p.m.	Coffee Break	30min	-
4:00 - 4:30 p.m.	Practical Applications for Metallic Materials and Structures	30min	JMB, RCT
4:30 - 5:00 p.m.	Practical Applications for Composite Components	30min	RDF, SG
5:00 - 5:30 p.m.	Wrap up and Summary	30min	RDF, SG, RCT, JMB, UG

*JMB = Professor Janice Dulieu-Barton, RCT = Dr Rachael Tighe, RDF = Professor Rosa De Finis, SG = Professor Suhasini Gururaja, UG = Professor Umberto Galietti

Date/Time: Sunday, June 1, 2025 | 9:00 a.m. – 6:00 p.m.

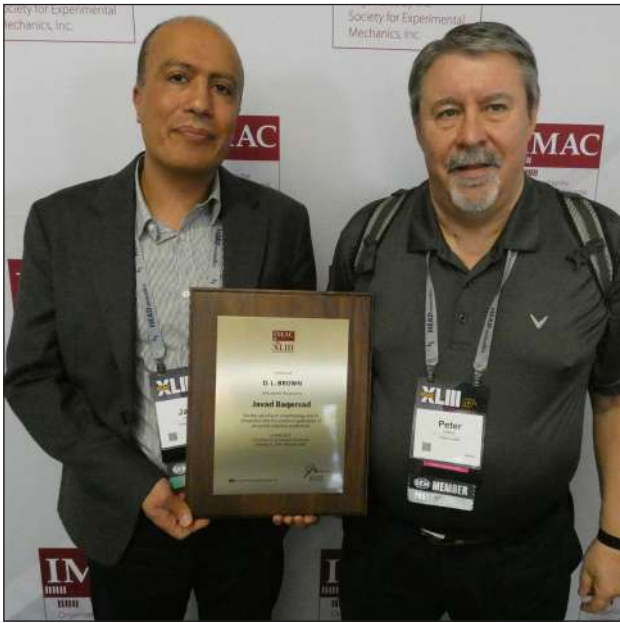
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IMAC-XLIII: Awards and Accolades

February 10-13, 2025 at the Rosen Plaza Hotel, Orlando, FL

WE WOULD LIKE TO THANK all the attendees and exhibitors for making IMAC-XLIII a success. Without the efforts of the organizers, chairs and technical divisions we would not have such a vibrant and welcoming community to share your research. Congratulations to all of the awardees for their well-deserved honors. ■

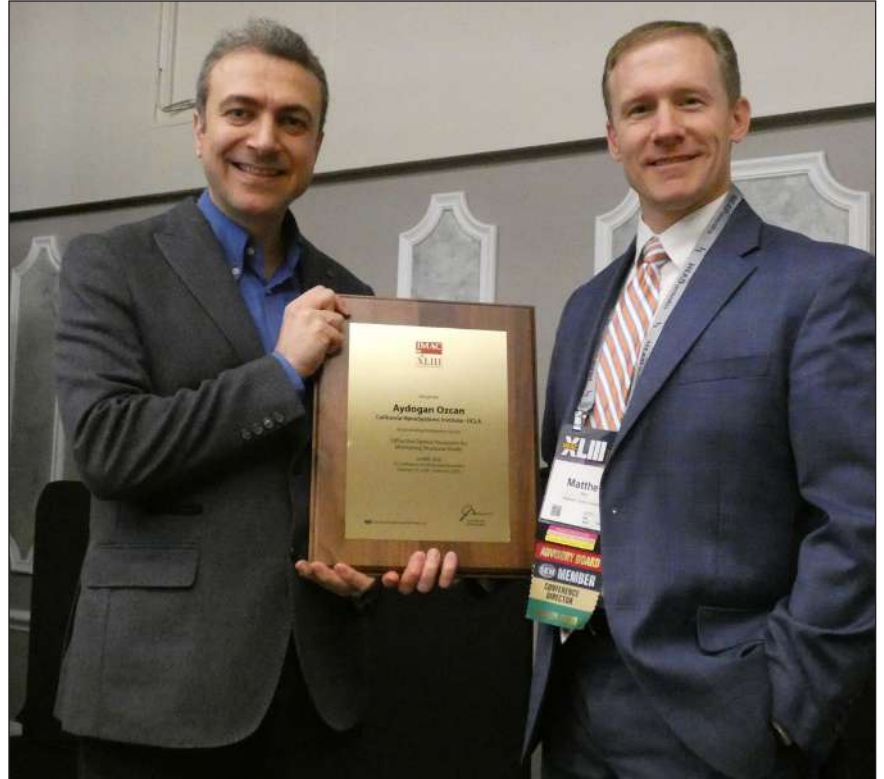


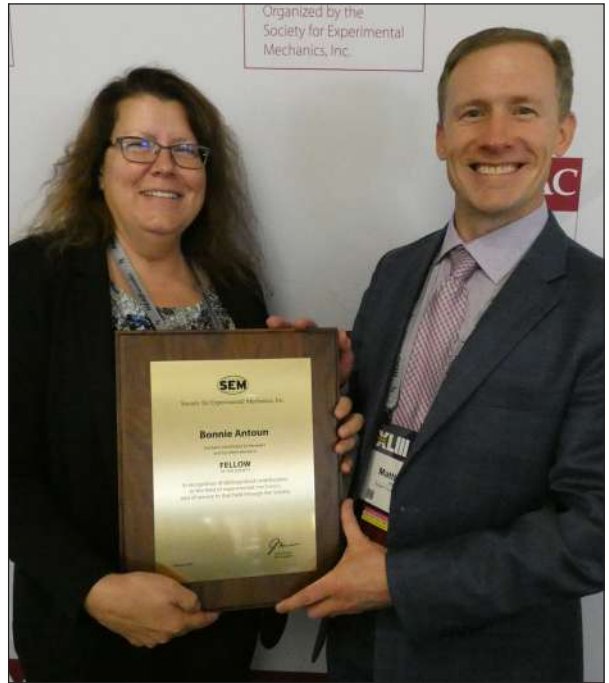
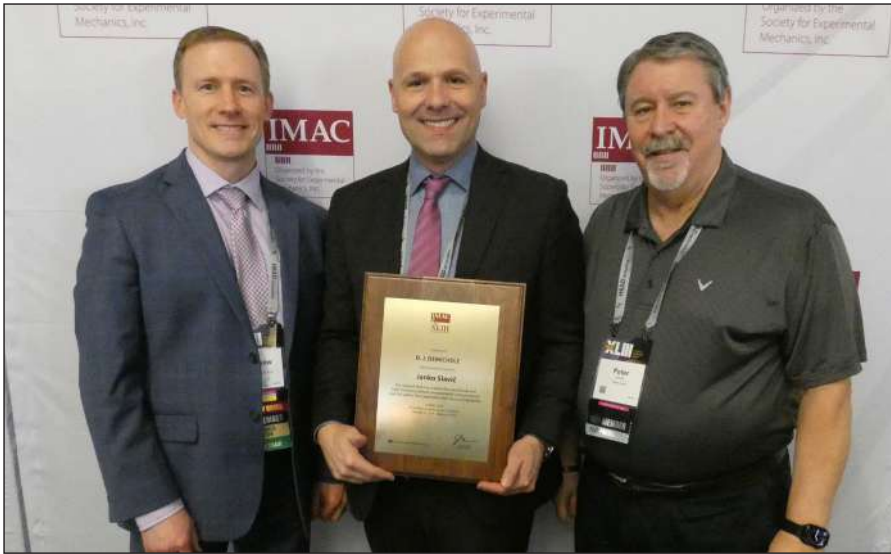
Above (clockwise): D. L. Brown awardee—Javad Baqersad with SEM Past President—Peter Avitabile; Aydogan Ozcan (with IMAC Conference Director Matt Allen) receives a plaque for his Keynote Lecture titled “Diffractive Optical Processors for Monitoring Structural Health”; Michael A. Sutton (with Tyler Schoenherr) receives a plaque for his Keynote Lecture titled “StereoDIC Fundamentals and Relevance in Modal/Dynamics Studies”

Opposite page (top row/left to right): IMAC Conference Director—Matt Allen and SEM Past President—Peter Avitabile with D. J. DeMichele Awardee—Janko Slavič; IMAC Conference Director—Matt Allen and SEM Fellow recipient—Bonnie Antoun

Opposite page (middle row/left to right): IMAC Conference Director—Matt Allen and SEM Fellow recipient—Mark Richardson; Model Validation and Uncertainty Quantification Best Paper winners for submission titled “A Probabilistic Reasoner Based on Bayes Risk for Damage Detection in Structural Systems”—Dane Quinn (left)—The University of Akron & David Najera-Flores (right)—ATA Engineering, Inc.

Opposite page (bottom row/left to right): Computer Vision and Laser Vibrometry Best Paper 3rd place winners for submission titled “Seeing Beyond the Surface – Structural Dynamics Identification through Multi-View Radiographic Imaging”—(left to right) Zhu Mao—Worcester Polytechnic Institute, Daniel Rohe—Sandia National Laboratories, & Peter Avitabile—University of Massachusetts Lowell; Computer Vision and Laser Vibrometry Best Paper 1st place winner for submission titled “Development and Validation of a Novel Miniaturized High-Precision Laser Vibrometer for Vibration and Ultrasonic Vibration Measurements”—Ke Yuan—University of Maryland



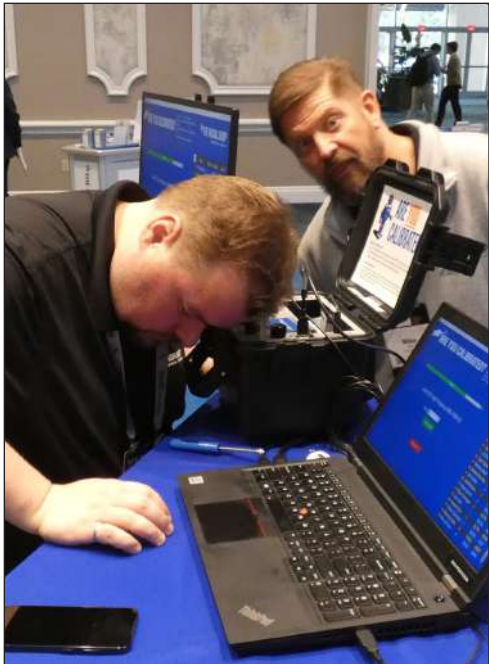


XLIII IMAC

MOMENTS

ORLANDO, FL | FEBRUARY 2025





See You Next
Year at **IMAC-XLIV**
in Palm Springs, CA!

Upcoming Events

2025

2025 SEM Annual Conference | June 2–5, 2025
Hyatt Regency Milwaukee
Milwaukee, WI, USA

2026

IMAC-XLIV | January 19–22, 2026
Riviera Resort & Spa Palm Springs
Palm Springs, CA, USA

2026 SEM Annual Conference | June 1–4, 2026
Hilton Norfolk The Main
Norfolk, VA, USA

2027

IMAC-XLV | February 1–4, 2027
Embassy Suites by Hilton Orlando Lake Buena Vista South
Kissimmee, FL, USA



MARK YOUR CALENDARS!

IMAC-XLIV

It's Not Just Modal Anymore

January 19-22, 2026

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