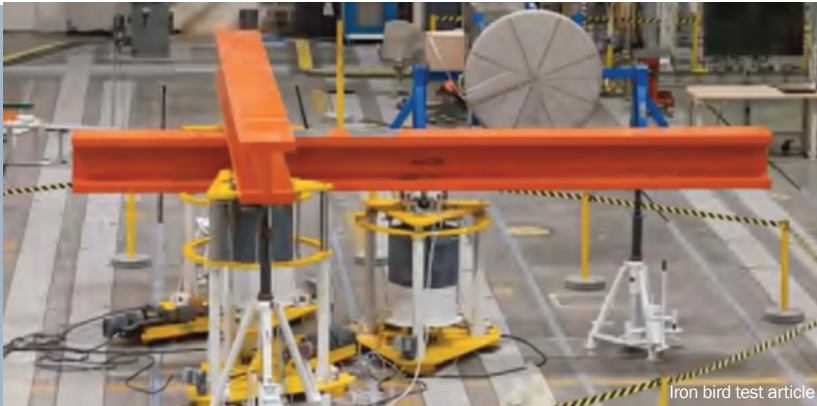


SOFTWARE newsletter

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Iron bird test article

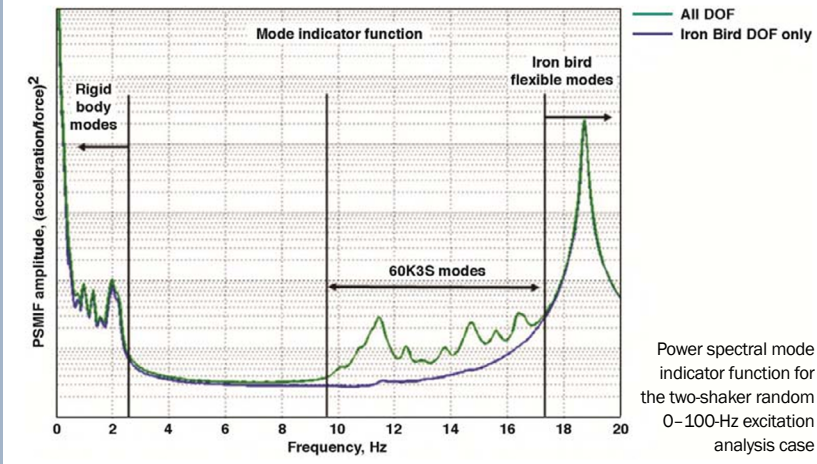


Image source: Chin, A., C. Herrera, N. Spivey, W. Fladung, and D. Cloutier, "Testing and Validation of the Dynamic Inertia Measurement Method," IMAC Conference and Exposition on Structural Dynamics, 2015.

IMAT in Action: Mass Properties from Ground Vibration Testing

DETAILS INSIDE

ATA Expands Support for the Altair Portfolio

ATA Engineering is pleased to announce expanded support for key solutions within the Altair software portfolio, giving customers additional flexibility in simulation, meshing, optimization, and multidisciplinary engineering workflows.

As engineering organizations continue to diversify their CAE environments, ATA is now positioned to assist customers working with leading Altair technologies including HyperMesh and OptiStruct, alongside ATA's longstanding expertise across structural dynamics, vibration, acoustics, and integrated simulation processes.

This expansion strengthens ATA's ability to support customers managing increasingly complex analysis ecosystems and complements the company's existing relationships across the broader simulation and digital engineering landscape.

Customers interested in learning more about available Altair solutions, licensing options, solver access, or high-performance compute capabilities are encouraged to contact ATA's [PLM Sales](#) team.

Explore the broader Altair product portfolio in the [Altair Product Showcase](#).

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IMAT in Action: Mass Properties from Ground Vibration Testing

Precise mass properties, such as center of gravity (CG), moments of inertia, and products of inertia, are critical for aerospace flight dynamics and loads analysis. However, traditional pendulum methods are costly, time-consuming, and risky for large, heavy structures.

NASA Armstrong Flight Research Center applied the dynamic inertia measurement (DIM) method to a 17,000 lb “iron bird” test article (two I-beams mimicking fighter-scale mass) during a standard soft-supported ground vibration test (GVT) with shakers and accelerometers. IMAT, ATA’s MATLAB® toolbox, was used to streamline the posttest workflow: engineers imported time-history and frequency response function (FRF) data and used IMAT+Signal tools to process and extract the DIM parameters for quick comparison against analytical predictions and pendulum results.

Results showed strong agreement, with mass and CG within ~1–3% and principal moments of inertia typically within 5%. The DIM approach halved testing effort compared to pendulum methods while decreasing labor, safety risks, and hardware needs.

IMAT made it possible to process the large datasets efficiently and repeatably, letting the team focus on the insights gained from the mass properties rather than data wrangling or developing custom scripts. This case shows how IMAT can extend routine GVT data into reliable mass-property identification, delivering faster results with confidence.

ATA continually enhances IMAT with regular updates, including modern MATLAB support, faster visualization, and new test utilities. To explore IMAT licensing, pricing, or implementation details, reach out to imat@ata-e.com or visit our [website](#).

Calendar of Events

UPCOMING TRAINING CLASSES

ATA provides comprehensive training in the use of Femap, Simcenter 3D (formerly NX CAE), and Simcenter Nastran (formerly NX Nastran). Upcoming training classes are shown below. Please visit [our website](#) to sign up for these classes or request a custom class.

FEMAP

JUL 27 [Introduction to Femap](#)

SIMCENTER NASTRAN WITH FEMAP

JUN 08 [Introduction to Dynamic Analysis with Femap for Pre/Post](#)

JUN 15 [Advanced Dynamic Analysis with Femap for Pre/Post](#)

AUG 03 [Multi-Step Nonlinear with Solutions 401 and 402 with Femap for Pre/Post](#)

AUG 10 [Introduction to Finite Element Analysis with Femap for Pre/Post](#)

SIMCENTER NASTRAN WITH SIMCENTER 3D

JUN 08 [Introduction to Dynamic Analysis with Simcenter 3D for Pre/Post](#)

JUN 15 [Advanced Dynamic Analysis with Simcenter 3D for Pre/Post](#)

AUG 03 [Multi-Step Nonlinear with Solutions 401 and 402 with Simcenter 3D for Pre/Post](#)

AUG 10 [Introduction to Finite Element Analysis with Simcenter 3D for Pre/Post](#)

UPCOMING EVENTS

Connect with ATA Engineering at these upcoming industry events.

MAY 26 [Siemens Webinar: Revolutionizing CAE with meshless simulation](#)

JUN 1-4 [Siemens Realize LIVE 2026](#)

ATA will be present at Realize LIVE alongside industry leaders in simulation, digital engineering, and product development.

ATA Siemens customers are eligible for a \$200 registration discount. When registering, mention ATA Engineering as your referral source and use promo code PartnersAMSRL26 at checkout.

JUN 23 [Acoustics and Transfer Path Analysis Seminars in Herndon, Virginia](#)

AUG 05 [Siemens User Event: Teamcenter](#)

ATA also provides a host of [free training resources](#) including tutorials, videos, and whitepapers.

Tips and Tricks

FEMAP: KEYBOARD SHORTCUTS

A few custom keyboard shortcuts can dramatically cut down repetitive work. A simple but powerful trick is assigning a key (e.g., “.”) to “Previous Command.” This step lets you instantly repeat your last action, which is helpful for iterative tasks where it is not worthwhile to write a macro. You can also map shortcuts to common actions such as the following:

- Show Thickness for quick model checks
- Toggling element/node visibility
- Running property-based color programs

STAR-CCM+: FIX ABAQUS CO-SIMULATION HANGS

If your STAR-CCM+/Abaqus co-simulation is not connecting—that is, Abaqus attaches to the CSE but STAR-CCM+ never initiates—check your Abaqus command-line options. A common culprit is the `-inter` (interactive) flag. This option is often used on clusters (e.g., with SLURM) to keep Abaqus jobs alive, but it can actually prevent STAR-CCM+ from establishing the co-simulation connection. You can find and edit this setting in Co-Simulations → Values → Abaqus Execution → Additional Command Line Options within the `.sim` file.

NX NASTRAN: PREVENT MODE RECOMPUTATION IN SOL 103 RESTARTS

If you are running SOL 103 with a static preload (STATSUB), you can still use restart runs purely for output (e.g., stress recovery) without recomputing modes—but only if the restart deck is limited to the modal subcase. If you exclude the static subcase and its STATSUB reference in the restart case control, Nastran will reuse the existing modal solution instead of re-solving, allowing you to efficiently generate multiple output sets from a single expensive cold start.

New Resources

[On-Demand Webinar: Optimization of TPMS Heat Exchangers in STAR-CCM+ Using NX and HEEDS](#)

In this webinar, Dr. Chris Ostoich of ATA demonstrates how an integrated workflow using NX, STAR-CCM+, and HEEDS can streamline triply periodic minimal surface (TPMS) design and optimization. The session highlights how to generate parametric TPMS geometries, automate computational fluid dynamics (CFD)-driven thermal analyses, and apply HEEDS-driven optimization to balance heat transfer, pressure drop, and manufacturability under real-world constraints

[On-Demand Webinar: Catch Design Issues Early with NX HD3D](#)

In this webinar, Jessie Belden, an NX expert at ATA, demonstrates how HD3D's automated checks help flag issues across parts and assemblies, from weight-limit exceedances to corrosion risks and product and manufacturing information (PMI) changes between revisions. The webinar also explains how teams can build custom validation checks aligned

with internal standards, ensuring consistent quality throughout the design process.

[On-Demand Webinar: Simcenter 3D Response Dynamics: Solver Deep Dive](#)

Selecting the right solver is critical when you are evaluating structural dynamics. This webinar delivers a detailed comparison of response dynamics solvers in Simcenter 3D, including traditional harmonic and random response approaches alongside newer sine and random base excitation methods. Wesley Scott of ATA walks through key differences in behavior among the solvers and demonstrates how to apply them effectively using a realistic spacecraft model.



how to apply them effectively using a realistic spacecraft model.

Recent News

ATA's Support to Artemis II

ATA Engineering congratulates NASA on the successful completion of the Artemis II mission, a major step forward in human space exploration and sustained lunar presence. ATA is proud to have played a key role in supporting critical Artemis systems, including Orion and the Space Launch System (SLS), by delivering advanced structural dynamics, test, and analysis expertise, as well as contributing through the NASA Engineering and Safety Center (NESC) and Scientifically Calibrated In-Flight Imagery (SCIFLI) team at NASA Langley Research Center. Learn more [here](#).

26 Years of Engineering Excellence

On April 1, 2026, ATA Engineering celebrated its 26th anniversary. Since 2000, our employee-owned company has solved complex engineering challenges for a diverse customer base across aerospace, defense, themed entertainment, industrial and mining, consumer products and beyond. Looking ahead, our team remains committed to pushing the boundaries of engineering innovation while upholding a standard of excellence defined by service, technical expertise, and delivering real value to our customers.

Join us in celebrating 26 years—read the full story [here](#).

On the Ground at the Space Symposium

ATA Engineering's Business Development team attended the 41st Space Symposium, held April 13–16 at The Broadmoor in Colorado Springs. Themes this year centered on the accelerating adoption of artificial intelligence in space operations, growing orbital congestion challenges, the increasing integration of national security and commercial space efforts, and advancing lunar infrastructure.

The team returned with fresh perspectives and solid new contacts to support the engineering work ATA does for complex space programs.



Featured Instructor

George Antoun



Mr. Antoun is a Senior Technical Advisor in ATA's Lakewood, Colorado, office with expertise in the dynamic modeling and analysis of complex aerospace structures. Over his 23 years at ATA, he has worked on an array of dynamics problems, including component mode synthesis modeling techniques for coupled loads analyses. He has supported modal tests with pretest analysis to select accelerometer locations and posttest model correlations, and he has studied the dynamic behavior of aerospace structures using both linear and nonlinear methods. Mr. Antoun has developed expertise in the use of nonlinear finite element approaches and multibody dynamic analysis codes in studying the stowing and deployment behavior of highly packaged space-bound origami structures as well as the deployment and landing of the Curiosity and Perseverance Mars rovers.

Mr. Antoun is a certified instructor for Siemens's Simcenter Nastran superelement course and ATA's IMAT+Modal course focusing on pretest analysis for modal test programs. He also supports ATA's CAE hotline. He received his bachelor of science degree in engineering from Trinity University in San Antonio, Texas, and his master's in engineering mechanics from the University of Wisconsin-Madison, where he studied shape memory alloys.



ATA Engineering, Inc., is recognized as an Expert Partner with validated expertise in Femap, Simcenter 3D, and STAR-CCM+.

Why choose ATA?

ATA Engineering is a nationwide provider of innovative, high-value, analysis- and test-driven mechanical engineering design solutions.

With nearly five decades of experience working with our customers to solve the most challenging design, test, and analysis problems, we have gained a reputation for excellence in the engineering community.

Our work on a wide range of products across a broad spread of industries has been recognized with numerous technical and service awards for excellence. This expertise and support are a key part of the added value we offer to all customers who purchase Siemens products from us, whether you are an independent contractor or a large engineering team. To provide best-in-class support to our VAR software customers, we have established a formal hotline system that provides on-demand support to resolve technical issues encountered by our customers in their implementation of the tools.

The hotline is staffed by experienced engineers, all of whom use these applications on a regular basis. ATA is also the Siemens preferred training provider and official developer of courseware for all Simcenter Nastran training.

ATA Technical Support

Need technical assistance? Call our hotline staffed by engineers at **877-282-4223**, or [visit us online](#). Even if you're not a current ATA customer, try us out for free.

Free Software Trials

[Contact us](#) for more information about free trials/demos of Femap and Simcenter Nastran, NX CAD and CAM, Simcenter 3D, Simcenter STAR-CCM+, Teamcenter, and Solid Edge.



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