

## AIAA SciTech 2027 CFP Design Engineering Technical Discipline

### Technical Discipline Chairs

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### Topic Description

Technical papers are solicited on design processes/methods, lifecycle design tools, human & organizational aspects of systems design, and design education in aerospace/related industries. Process-oriented papers focus on methods, architecture, and approaches from exploratory design through detailed design, manufacturing, and service. Education-oriented papers emphasize design in curriculum development, class content, or student design/build activities. Product-oriented papers capture innovative/distinctive concepts or demonstrate design efficiency improvement. Emerging technologies for collaborative design within global digital environments, mission effectiveness design, knowledge-based approaches, multidisciplinary, multifidelity design optimization, trustworthiness, decision making under uncertainty, innovative design processes, tools, and technologies applicable to aeronautics and astronautics are desired. Novel coverage of more traditional disciplines of structural design, mechanical design, geometric design, aerodynamic/flight performance design, and aircraft/spacecraft design are welcome. Cutting-edge approaches employing computational intelligence/creativity, human-machine teaming, cognitive aspects of design, AI/ML beyond surrogate modeling, model-based engineering, multifunctional or adaptive structures, leveraging novel energy sources, etc. are strongly encouraged.

### Subtopics

- Human, cognitive, team, and organizational aspects of the design process across the full lifecycle
- Integrating new technologies and emerging capabilities in systems design
- Novel systems, system of systems, and mission designs
- Emerging design methods, tools, or processes, including model-based eng. & MBSE (joint DE/DGE/SE)
- Computational intelligence, AI/ML/PIML assisted design, & knowledge-based approaches (joint DE/DGE)
- Design for system lifecycle, decommissioning,ilities & effectiveness-based design (joint DE/SE/TF)
- Creative design, emerging trends, new processes, novel aerospace applications (joint DE/HMT/SAT/TF)
- Designing collaborative autonomous sys, multi-vehicle, swarming, & operator needs (joint DE/HMT/TF)
- Trustworthiness and reliance in adopted intelligence/automation tools and processes (joint DE/SAT)
- Multi-disciplinary holistic design and decision-making under uncertainty (NDA/MDO/DE/ACD)
- V&V, uncertainty quantification, certification by analysis in digital environments (joint DGE/DE/NDA)
- Advanced manufacturing, composites, adaptive structure design & rapid prototyping (joint AS/DE/MAT)
- Multifunctional and multipurpose air and space structural design (joint ACD/DE/MAT/STR)
- Digital engineering/design for electrified aircraft, system models, & ecosystems (joint DE/DGE/EAT)
- Advances in design education, K-12 STEAM initiatives, extended university curricula (joint DE/EDU)
- Novel energy powertrains in air veh des - H2, nuclear, solar & atm radiation (joint EAT/DE/INPSI/TF)
- Special Session: Vision for next generation design methods, processes, tools, and technologies
- Other topics, methods, processes, tools, or technologies related to design engineering

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### Abstract Submission Guidelines

To promote high quality technical papers, extended abstracts conforming to the following guidelines are encouraged:

- AIAA provides templates for conference papers that can help organize and format both your abstract and technical paper. Following these templates is not mandatory for the abstract, but must be followed for your final paper submission once accepted  
<https://www.aiaa.org/events-learning/events/Technical-Presenter-Resources>
- Authors are encouraged to submit an extended abstract that clearly outlines the objectives and purpose of their paper, relevant background, preliminary results to date, and anticipated conclusions and advancements to the state of the art. There is no minimum required abstract length, but nearly complete or draft papers are often beneficial.
- The following content guidelines are helpful when preparing your extended abstract submission:
  - Abstract:** The submitted extended abstract should begin with a concise abstract summarizing the purpose and anticipated key points of the completed paper
  - Introduction:** The introduction provides background and context, a brief assessment of prior work, and the paper's expected key contributions
  - Technical Sections:** These sections should provide sufficient detail on the methodology, technical approach, and anticipated results to allow paper reviewers to appropriately assess technical merit and importance of the authors' contributions to the state of the art, including
    - Relevant figures, diagrams, and flowcharts to aid in developing the technical approach
    - Preliminary results that support important contributions or impact
    - Other evidence demonstrating intended paper scope and current status of the effort to indicate likelihood of completing technical paper on time
  - References:** As utilized and relevant to the proposed work and to provide provenance of concepts further developed or research proposed