AIAA Aviation 2025 CFP
Design Engineering Technical Discipline

Technical Discipline Chairs

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Topic Description

Papers are solicited on design engineering, design process, and design education in aerospace/related industries. Product-oriented papers should focus on innovative or distinctive concepts leading toward products that effectively satisfy requirements or demonstrate design efficiency improvement. Process-oriented papers should focus on process definition, architecture, and metrics applied to engineered products from exploratory design through detailed design, manufacturing, and service. Education-oriented papers should emphasize design in curriculum development, class content, or student design/build activities. Emerging technologies to enable collaborative design working within global digital environments, open-source design aids, engineering design guides, multi-disciplinary, multi-fidelity design optimization, innovative design processes, tools, and technologies applicable to any aerospace activity are desired. Novel coverage of more traditional disciplines of structural design, mechanical design, geometric design, aerodynamic/flight performance design, electrical/electromagnetic design, propulsion design, and aircraft/spacecraft design are welcome. Cutting-edge approaches employing computational intelligence/creativity, human-machine teaming concerns, AI/ML beyond surrogate modeling, model-based design, VR/AR, advanced digital technologies, etc. are strongly encouraged.

Subtopics

- Advanced manufacturing applied to aerospace component design, prototyping, and effectiveness
- AI/ML applications to design (e.g., Human/Machine Teaming, inverse design, generative design, etc.)
- Cloud computing, unique design environments, industrial Internet of Things (IoT)
- Composite structural analysis, design, testing, and manufacturing
- Computer aided design including intelligent master (parametric feature-based, etc.) modeling
- Design education - STEM in K-12, university curriculums, projects, and activities (joint TF/DE)
- Design methods, tools, and processes in support of aircraft/missile design (joint ACD/DE)
- Design methods, tools, and processes in support of spacecraft/satellite design
- Design tools and processes for mission/trajectory design, rapid prototyping, concept exploration
- Digital environments - provides digital twin context through entire life cycle (joint DGE/DE)
- Early design approaches for increased -ilities (reliability, availability, maintainability, etc.)
- Improved robust designs using Multi-disciplinary Design Analysis and Optimization (MDAO)
- Innovative & creative designs in aerospace, use of XR/VR/AR in aerospace design applications
- Knowledge-Based Engineering for retention/reuse of engineering knowledge and data (joint DGE/DE)
- Model-Based Design applied to complex systems, topology design, or systems of systems
- Model-Based Engineering - product and environment digital twin simulations (joint DGE/DE/MST)
- Optimization and product improvement in engineering design (joint MDO/DE)
- Role of virtual and global platforms in design (e.g., Omniverse)

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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