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Special Issue Reprint

Dynamics and Control of Aerospace Systems

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This reprint offers a comprehensive collection of cutting-edge research in the dynamics, control, and actuation of aerospace systems, addressing critical challenges and innovative solutions within aerospace engineering. By integrating novel methodologies and practical applications, this reprint showcases advancements in distributed control for space manipulators, state-dependent control for drag-free satellites, hybrid propulsion systems for interplanetary CubeSats, and advanced strategies for aero-engine and spacecraft control. A diverse range of techniques, including sliding mode control, model predictive control, decentralized LQR, and adaptive fuzzy control, are explored to achieve robust solutions for trajectory tracking, vibration suppression, and integrated guidance and control. Furthermore, this reprint highlights the transformative potential of advanced materials and sensing technologies, such as piezoelectric sensors, fiber Bragg grating (FBG) systems, and smart materials, in enhancing vibration suppression, structural health monitoring, and system reliability. Through a combination of theoretical modeling, computational analysis, and experimental validation, the studies provide a holistic perspective on the design and optimization of aerospace systems. Aimed at researchers, engineers, and professionals, this reprint serves as an invaluable resource for understanding the latest advancements and future directions in aerospace dynamics, control, and actuation technologies.

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