

Special Issue

Spacecraft Close-Proximity Operations

Message from the Guest Editor

Robust trajectory optimization, uncertainty modeling, non-cooperative targets: In recent years, uncertainties and robust trajectory optimization have gradually become core research topics in close-proximity spacecraft operations. In particular, missions involving non-cooperative space targets are characterized by incomplete information and complex constraints, where safety remains the primary objective. Uncertainties mainly arise from dynamic model errors, inertia parameter identification errors, external disturbances such as aerodynamic effects, non-spherical gravity perturbations, solar radiation pressure, and actuator errors, as well as relative navigation and attitude estimation errors. These uncertainties significantly degrade the safety and success rate of close-proximity operations and, if not properly accounted for during trajectory optimization, may lead to collision risks or even mission failure.

Guest Editor

Prof. Dr. Shunli Li
School of Astronautics, Harbin Institute of Technology, Harbin 150001, China

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Aerospace
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
aerospace@mdpi.com

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Editor-in-Chief

Prof. Dr. Konstantinos Kontis
School of Engineering, University of Glasgow, James Watt Building
South, University Avenue, Glasgow G12 8QQ, UK

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