actuators

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Actuation for Space Applications

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Deadline for manuscript submissions:
closed (15 September 2021)

Message from the Guest Editor

Dear Colleagues,

Space conquest, deep space exploration, space tourism, communication, and earth observation generate an increasing need for high-performance actuators and actuation systems, e.g., for thrust vector and attitude control, robotic arms and robotized tools, docking, deployment, and pointing mechanisms. All these applications must simultaneously meet incredibly specific constraints related to weight, energy consumption, reliability and availability, service life, and harsh environment. Given the wide range of power requirements, from Newtons to ton tens and microns to meters, space actuators involve vastly different technologies, such as electromagnetics, hydraulics, piezoelectric and smart memory alloys.

Authors are invited to contribute to this Special Issue by submitting original research papers and review articles dealing with:

1. New applications and technologies;
2. Innovative design approaches for sizing and control;
3. Reliability, heath monitoring, and reconfiguration;
4. Advanced use of model-based/simulation-aided design;
5. Real and virtual testing methods and tools.

Prof. Dr. Jean-Charles Maré
Guest Editor

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Message from the Editorial Board

We are just entering the Next Wave of Technology (NWT) where actuators will play the same role as the computer chip did for computers/social media approximately four decades ago. Just in the U.S., production of $1 trillion year of electromechanical systems (vehicles, orthotics, manufacturing cells, freight trains, aircraft, etc.) will be impacted by the NWT, all driven by actuators. Five key trends can be found for the future perspectives: “Performance to Reliability”, “Hard to Soft”, “Macro to Nano”, “Homo to Hetero” and “Single to Multi functional”. We invite papers that primarily impact these economic sectors; those illustrating basic scientific principles are also welcome.

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