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Jiaxing · China

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Lecture: State-of-the-Art for Small Satellite Propulsion Systems

Dr. Chong Chen is an Assistant Professor in the School of Aeronautics and Astronautics at Dalian University of Technology, where he also supervises Master's students. He earned his Ph.D. in Aerospace Propulsion from Northwestern Polytechnical University, with a research focus that spans advanced propulsion systems, multiphysics modeling, and satellite data applications.

His current work includes the development of electrospray propulsion systems for micro- and nanosatellites, where he designs compact porous-ceramic thrusters capable of producing approximately 100 μN of thrust with high specific impulse. His research combines both experimental and numerical approaches, using sophisticated diagnostics and simulation tools to investigate key mechanisms such as Rayleigh jet breakup and ion evaporation.

Dr. Chen is also the creator of ASSES, a custom-developed numerical solver for complex multiphase electrohydrodynamic flows. It incorporates adaptive mesh refinement and level-set methods for precise modeling of gas-liquid-solid interactions. He recently expanded this work into a unified level-set framework, enabling the simulation of multiphase systems with extensions toward plasma and electromagnetic field interactions.

Beyond propulsion and fluid dynamics, Dr. Chen's research extends into the application of micro/nanosatellite data, particularly in the areas of image preprocessing, target detection, and mission planning for multispectral and infrared satellite constellations. His work supports the development of enhanced autonomous remote sensing systems, both onboard and through ground-based data interpretation.

With his interdisciplinary expertise and contributions to emerging satellite technologies, Dr. Chen plays an active role in advancing the capabilities of next-generation space systems.