Bayou Science & Mathematics Colloquium

Hosted by the College of Science & Engineering

Thursday, November 2, 2017 Bayou 2106, 12:00 Noon – 1:00 PM

The VASIMR Technology, Demonstrated Physics and Practical Challenges

Dr. Jared Squire
Senior Vice President of Research
Ad Astra Rocket Company

The Variable Specific Impulse Magnetoplasma Rocket (VASIMR®) is a radio frequency (RF) driven high density two-stage magnetized plasma rocket for in-space propulsion. The VASIMR® technology takes advantage of natural waves that exist in a magnetized plasma without density cut-offs. The RF drive and high plasma density together enable a VASIMR® device to operate at very high-power density, much higher than most other plasma propulsion technologies. The physics of these waves and the associated plasma acceleration mechanisms are well established, and a working system (VX-200™) at the Ad Astra Rocket Company has demonstrated the high-power (over 100 kW) function for propulsion. Plasma exhaust power densities exceeding 10 MW/m^2 are achievable. With the physics demonstrated, the challenges are the engineering to build a practical system. The challenges include: RF power processing units (RF-PPUs), thermal management, material selection and fabrication, superconducting magnets and propellant management. Solutions to these challenges are at hand. A 100 kW class VASIMR® engine has near term practical applications to in-space Solar Electric Propulsion (SEP) with a favorable growth potential as electrical power availability increases. This presentation will review the fundamentals of a VASIMR® system, discuss the underlying physics, and point out the challenges of bringing the technology to practice.

Host: Dr. David Garrison

Refreshments will be served in the hallway of Bayou 2106 from 11:30AM – 12:00Noon!

Contact Information: Dr. David Garrison
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Any person needing an accommodation for a disability to participate in this program should contact the sponsoring organization at (281) 283-3770 to make the necessary arrangements.

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The choice is clear.