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Author: Dr. Jose Antonio Castro Nieto
Ad Astra Rocket Company, Costa Rica, jose.castronieto@adastrarocket.com

VASIMR(R) VX-CR: STATUS AND CHARACTERIZATION UPON UPGRADE OF ITS MAGNETIC
CONFIGURATION

Abstract

We report on the upgrade of the VASIMIR(R) VX-CR experiment upon improvement of its magnetic configuration. Currently under development at Ad Astra Rocket company and its subsidiaries, the VASIMR(R) engine is a high-power electric propulsion system consisting of a helicon plasma source, an ion cyclotron heating stage, and a magnetic nozzle.

The VX-CR is the flagship experiment at Ad Astra Rocket Company's subsidiary in Costa Rica. As part of the developmental stages of the VASIMR(R) technology, the VX-CR investigates lifetime solutions to the helicon source, thus it only consists of the first stage of the engine.

Here, we report on status of the VX-CR experiment and the characterization of the plasma plume (electron temperature, density, ion cost and ionization fraction) after upgrade of our magnetic field configuration. We measure the parameters of the plasma plume with a reciprocating Langmuir probe and additionally, several temperature sensors measure the thermal behaviour of the core.

Future work will measure wall erosion within the core of the VX-CR directed towards the development of the steady state VASIMR(R) engine.