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**Discharge Voltage Utilization in Electric Propulsion Devices**
JERRY ROSS, Shawnee State University — In the field of space propulsion the world is divided into two camps: Chemical and Electric. Electric propulsion (EP) devices, such as the Hall thruster, are gaining use for space travel against their chemically propelled counterparts because of the propellant mass savings that EP can offer. This reduction in propellant mass allows for a lighter spacecraft and/or a more massive payload. Many missions, however, are time sensitive and electric propulsion devices are not capable of producing the levels of thrust necessary to meet the trip-time demands. In these missions, chemical thrusters must be used as the primary propulsion device at the expense of a increased onboard propellent mass. The result is that many of today's spacecraft have both a primary propulsion device, such as a chemical rocket, as well as an auxiliary device for stationkeeping tasks, often an electric propulsion rocket. Dual systems require dual propellant tanks, power supplies, mass flow controllers, etc. Therefore, there is a desire in the electric propulsion community to create an EP device that can function both as a primary and auxiliary device for a spacecraft. Research has shown unmodified Hall thrusters exhibit poor thrust efficiency as primary devices. This presentation details the inner workings of a

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