Electric propulsion has been used on six deep-space science missions—Deep Space 1, SMART-1, Hayabusa 1, LISA Pathfinder, Hayabusa 2, and Dawn—and is being used on over a hundred commercial communication satellites. The next robotic science missions to use ion propulsion will be NASA’s mission to the metal world (16) Psyche and ESA’s BebiColombo mission to Mercury. All of this activity is driven by the inescapable reality quantified by the rocket equation, and yet electric propulsion has so far just scratched the surface of what it can do. This talk will discuss how we got to this point and how advanced electric propulsion technologies have the potential to impact an impressive range of humanity’s future space activities including: robotic deep-space science missions; human missions beyond low-Earth orbit; planetary defense; asteroid mining; gravitational wave experiments; rapid transportation throughout the solar system; and even interstellar precursor missions.

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