

The Use of Vacuum Electronic Devices in NASA Missions

Vacuum electronic devices, such as Traveling Wave Tube Amplifiers (TWTAs), play a significant role in space exploration and Earth's remote sensing. Specifically, they have been widely used in Radio Frequency (RF) communications. In this talk, I will highlight several NASA missions in orbit and in development that use TWTAs, discuss their general science application and how a TWTA enables the RF Communication System to downlink science data and meet the mission objectives.

Some specific NASA Science Missions that I will talk about, include Wide Field Infrared Survey Telescope (WFIRST), Plankton-Aerosol-Cloud-Ocean Ecosystem (PACE), Lunar Reconnaissance Orbiter (LRO), Joint Polar Satellite System (JPSS-2), and the James Webb Space Telescope (JWST). In the past, TWTAs have been selected because of their superior efficiency when compared to Solid State Power Amplifiers (SSPAs). And although SSPA technology has improved, highly efficient TWTAs will continue to find their place enabling high data rate communications systems from near-Earth and beyond.