

55th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE
ACTIVITIES (D5)

Prediction, Testing, Measurement and Effects of space environment on space missions (3)

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A REVIEW ON PLANETARY AURORAS AND ITS CAUSE IN SOLAR SYSTEM

Abstract

Decades of observations through in-space telescopes, planetary orbiters, and ground-based observatories revealed that earth's aurorae aren't the only ones in our solar system, evidence of auroras on Saturn, Jupiter, Mars, Uranus, Neptune, and Venus have been routinely found. The most beautiful representation of physics, "Auroral Phenomenon", is a result of the solar winds, interplanetary activities, and magnetospheres'; basically external energetic particles' interaction with the planet's atmosphere. The resulting light patterns are different for different planets but all follow the same convention of auroras and give an insight of how space weather affects a planet's magnetic field. Auroras play an influential part in the energy equilibrium between entering solar radiation and outer planetary radiation and can have important dynamical effects on the atmosphere, ionosphere, thermosphere. Observing a planet's auroral emissions, reveals composition, temperature, energy, and magnetospheric plasma properties all at once. The paper review is on a comparative study of auroral phenomena in different environments in our solar system, giving a clear conception of similarities and dissimilarities of the phenomenon and its cause.