

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IP)

Author: Mr. Sarath Raj Nadarajan Syamala
Amity University, Dubai, United Arab Emirates, sraj@amityuniversity.ae

Mr. Fawzan Mohamed Kareem Navaz
Amity University, Dubai, United Arab Emirates, fawzanmohamedK@amitydubai.ae
Ms. Nuha Sami
Amity University, Dubai, United Arab Emirates, nuhaS2@amitydubai.ae

THE STUDY OF CHANGES IN H⁺ ION CONCENTRATION CONSTITUTING THE AURORAL
FORMATION IN MARS USING EMM, MAVEN & THEMIS

Abstract

Proton patchy auroras at Mars are created when energy released in the solar wind is transferred to the Martian atmosphere and surface in the form of charged particles known as plasma. These particles can then collide with the thermosphere to produce auroral emissions. The patchiness of these auroras is thought to be related to turbulent space weather and has been studied using observations from the Mars Atmosphere and Volatile Evolution (MAVEN) mission's Imaging Ultra-Violet Spectrograph (IUVS) and the Emirates Mars Mission's (EMM) Emirates Mars Ultraviolet Spectrometer (EMUS) using H 121.6 nm and H 102.6 nm Lyman wavelengths. This study aims to understand the formation of auroras and their thermal signatures at different altitudes on Mars, taking into account the impact of solar storms. It also compares the geometry, brightness, pulsating frequency, and coherence exhibited by Martian auroras using data from EMM, MAVEN, the Mars Global Surveyor (MGS), and the Thermal Emission Imaging Systems (THEMIS).