

Highlights of scientific imagery from Juno's Stellar Reference Unit

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Abstract

The Juno Stellar Reference Unit (SRU) is a highly sensitive visible wavelength camera designed to image stars for the engineering task of spacecraft attitude determination. The Juno mission is also utilizing this camera to contribute to multiple scientific disciplines.

1. Introduction

Since Juno's arrival at Jupiter in 2016 the SRU has been harnessed as an *in situ* high energy particle detector by Juno's Radiation Monitoring (RM) Investigation [1], [2]. When the geometry of Juno's 53-day orbit began to present the opportunity to observe the dark side of the planet, RM extended the breadth of the SRU's scientific observation targets to include several low light phenomena. Since Juno's eleventh perijove pass on 7 February 2018 the SRU has been used to collect images of Jovian lightning flashes and auroral emission on the dark side of Jupiter. Unique images of Jupiter's dust ring and Jupiter's moon Io have also been collected under low light conditions.

2. Results

The unique combination of Juno's close flybys (~4,000 km from the cloud tops at closest approach), the spacecraft's 30 second spin period, and the SRU's high sensitivity under low light conditions have produced first of a kind observations of Jupiter's lighting and aurora from as close as ~50,000 km from the 1 bar level. SRU lightning observations have provided increased resolution on flash energy, duration, flash rate, and size. We will present highlights of SRU imagery through perijove 20 and discuss results from our study of Jupiter's lightning.

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References

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