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Proof**CONTROL ID:** 2071708**SUBMISSION ROLE:** Regular DPS Abstract**DATE/TIME CREATED:** August 21, 2014, 2:35 PM**TITLE:** LADEE UVS Observations of Atoms and Dust in the Lunar Tail**ABSTRACT BODY:**

Abstract (2,250 Maximum Characters): The Lunar Atmosphere and Dust Environment Explorer (LADEE) was a lunar orbiter launched in September 2013 that investigated the composition and temporal variation of the tenuous lunar exosphere and dust environment. A major goal of the mission was to characterize the dust exosphere prior to future lunar exploration activities, which may alter the lunar environment. The Ultraviolet/Visible Spectrometer (UVS) onboard LADEE addresses this goal, utilizing two sets of optics: a limb-viewing telescope, and a solar-viewing telescope (Colaprete et al. 2014a). We report on spectroscopic (~280-820 nm) observations viewing down the lunar wake or along the 'lunar tail' from lunar orbit. Prior ground-based studies have observed the emission from neutral sodium atoms extended along the lunar tail, so often this region is referred to as the lunar sodium tail (e.g., Smith et al. 1999, Wilson et al. 1999).

UVS measurements were made on the dark side of the moon, with the UVS limb-viewing telescope pointed outward in the direction of the Moon's wake (almost anti-sun), during different lunar phases. These UVS observation activities sample a long column and allow the characterization of scattered light from dust and emission lines from atoms in the lunar tail (Colaprete et al. 2014b). Observations in this UVS configuration show the largest excess of scattered blue light in our data set, indicative of the presence of small dust grains in the tail. Once lofted (e.g., Stubbs et al. 2006), nanoparticles may become charged and picked up by the solar wind, similar to the phenomena witnessed above Enceladus's northern hemisphere (Farrell et al. 2012) or by the STEREO/WAVES instrument while close to Earth's orbit (Meyer-Vernet et al 2009). The UVS data show that small dust grains as well as atoms become entrained in the lunar tail.

References:

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PRESENTATION TYPE: Oral**CURRENT * CATEGORY:** Moon: Surface and Atmosphere | Dust and Solar Wind**CURRENT :** None | None**AUTHORS (FIRST NAME, LAST NAME):** [Diane H. Wooden](#)¹, Anthony Colaprete¹, Amanda M. Cook², Mark H. Shirley¹, Kara E. Vargo², Richard C. Elphic¹, Timothy J. Stubbs³, David A. Glenar⁴**INSTITUTIONS (ALL):** 1. NASA Ames Research Center, Moffett Field, CA, United States.

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