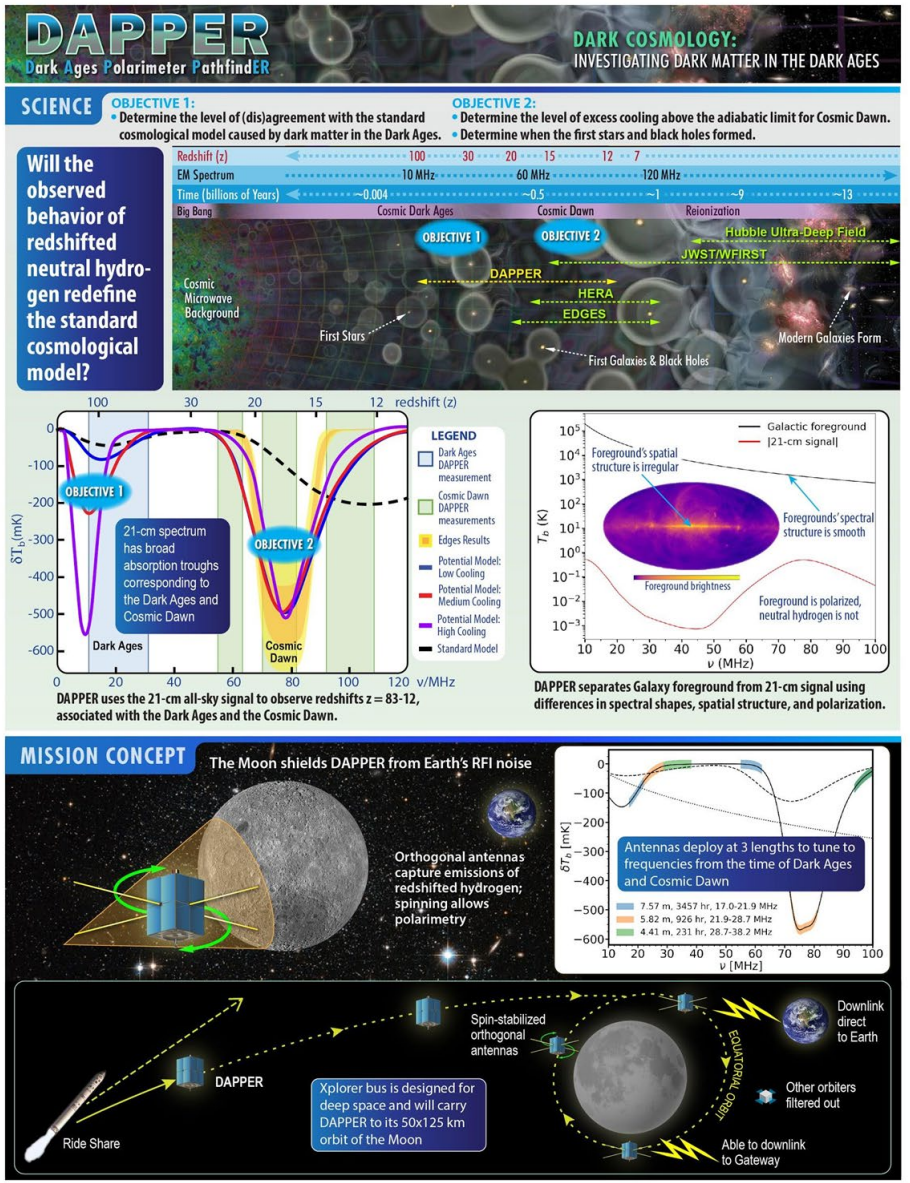
SSERVI Monthly Report
NESS/PI Burns - April, 2019

Progress Report

- **Research highlights: MacDowall** is leading the NASA Provided Lunar Payload instrument called Radio wave Observations of the Lunar Surface photoElectron Sheath (ROLSES). Work on assembling the ROLSES instrument is underway at NASA Goddard Space Flight Center.
- **Papers:** 21-cm cosmology white papers led by NESS members submitted to the Astronomy & Astrophysics Decadal Survey 2020: (1) "Astro2020 Science White Paper: First Stars and Black Holes at Cosmic Dawn with Redshifted 21-cm Observations", **Mirocha** et al, arXiv:1903.06218; (2) "Astro 2020 Science White Paper: Fundamental Cosmology in the Dark Ages with 21-cm Line Fluctuations", **Furlanetto** et al, arXiv:1903.06212; (3) "Astro2020 Science White Paper: Insights Into the Epoch of Reionization with the Highly-Redshifted 21-cm Line", **Furlanetto** et al, arXiv:1903.06204; (4) "Astro2020 Science White Paper: Synergies Between Galaxy Surveys and Reionization Measurements", **Furlanetto** et al, arXiv:1903.06197.
- **News:** (1) "National Space Council to meet to discuss exploration plans"; (2) "Vice President may tell NASA to accelerate lunar landings"; (3) "Why America Wants to Send Astronauts to the Moon's South Pole"; (4) "Boulder scientist endorses White House bid for U.S. astronauts to moon by 2024"; (5) "Beyond Earth: How humans will tackle the next generation of space travel"; (6) "The Race to Develop the Moon - For science, profit, and pride, China, the U.S., and private companies are hunting for resources on the lunar surface".
- **Events:** Coalition for Deep Space Exploration held an "Ask Me Anything" event on Capitol Hill on the future of Human Space Exploration, including **Burns**.
- **Meetings:** "The Space Astrophysics Landscape for the 2020s and Beyond", Potomac, MD, April 1-3: **Burns** moderated the session "Astrophysics Enabled by the Human Space Flight Program"; **Hallinan** presented on "FARSIDE: Low-Frequency Telescope on the Lunar Farside" and **MacDowall** a poster on "Solar Radio Burst Observations by the Farside Lunar Surface Radio Array".
- **Outreach:** Astronomy Day at CU Boulder, April 6: (1) **Burns** delivered the keynote presentation on "Our Future in Space: The Moon and Beyond" at the Fiske Planetarium; (2) **Rapetti** contributed on behalf of NESS to the Radio Room public activity at the Sommers-Bausch Observatory.



Moment of Science:

Left: First page of the fact sheet for the Astrophysics SmallSat concept study on the *Dark Ages Polarimeter PathfindER (DAPPER)*. This mission concept aims at measuring the Dark Ages and Cosmic Dawn absorption troughs predicted at low radio frequencies. Departures from the standard model of cosmology, possibly caused by dark matter, will be tested at more than 5σ level.

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