

EDUCATION

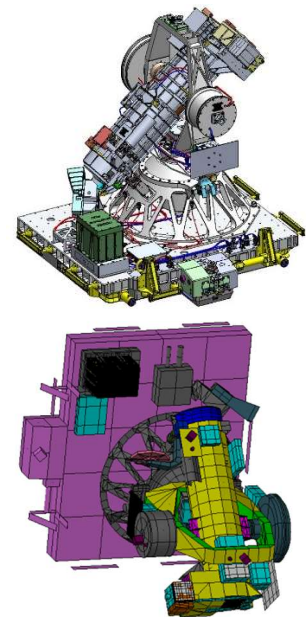
9/14 – 5/18

B.S. Mechanical Engineering*University of Maryland, College Park***EXPERIENCE**

11/20 – Present

Coronal Diagnostic Experiment (CODEX) Thermal Engineer*NASA Goddard Space Flight Center / Wallops Flight Facility / Korean Astronomy and Space Science Institute (KASI)*

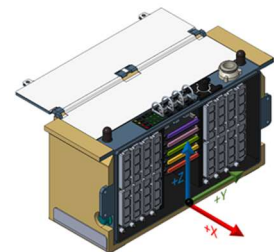
- Developed Thermal Desktop™ Geometric and SINDA/FLUINT Thermal Math Model (TMM) for CODEX instrument and ISS FRAM payload design.
- Designed spacecraft thermal management system including radiator sizing, heater sizing, thermal mass sizing, optical property selection, thermophysical property selection, and heat flow planning for International Space Station payload in accordance with NASA GSFC GEVS and Gold Rules
- Developed and presented Critical Design Review packages for component and payload level thermal control systems
- Developed component, instrument, and payload TVAC test plans to ensure the Thermal Control Subsystem meets design requirements
- Collaborated with KASI, an international space agency, in the development and testing of optical detection electronics in accordance with NASA standards



10/21 – Present

Lunar Experiment Survival System and Handling*NASA Goddard Space Flight Center*

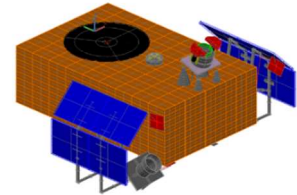
- Supporting multidisciplinary team to develop a common services package (Comms, C&DH, Thermal) for astronaut handled and deployed instruments for the NASA Artemis missions at the Lunar poles
- Developed Thermal and Environmental requirements document based on guidelines from NASA Artemis and Human Landing System
- Developed and presented System Requirements Review for the Thermal Control Subsystem including conceptual layout



4/19 – 3/22

Lunar Environment Monitoring Station (LEMS) Thermal PDL*NASA Goddard Space Flight Center*

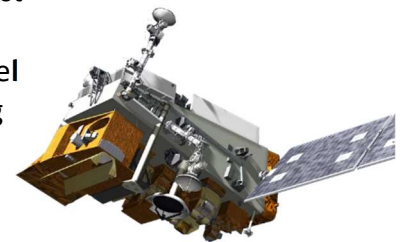
- Designed LEMS TCS to survive surface temperatures between -180°C and 120°C over a 29.53 day cycle including a 354 hour eclipse by incorporating a heat switch, IMLI, and extreme thermal conduction isolation across critical interfaces
- Successfully tested LEMS Thermal Control Subsystem to TRL-6 standards to ensure LEMS is capable of surviving the Lunar night.
- Developed Thermal Desktop Geometric Math Model (GMM) and SINDA/FLUINT Thermal Math Model (TMM) for LEMS
- Performed, documented and presented worst case hot/cold thermal analysis results to Systems and at major design reviews
- Procured novel thermal blanket technology from vendor by writing requirements, overseeing design and analysis, and verifying receipt of product



Developed and conducted thermal vacuum test plan and procedure to measure MLI thermal blanket effective emittance. Presented results of test at TFAWS, a national spacecraft thermal engineering conference

Joint Polar Satellite System Thermal Test Engineer*NASA Goddard Space Flight Center / Northrop Grumman*

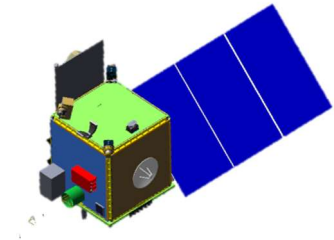
- Supported months long Satellite-level TVAC test as NASA representative
- Developed test telemetry post-processing excel spreadsheets to inform real time data tracking and decision making
- Supported Failure Review Board by analyzing instrument thermal desktop model and producing analytical predictions
- Supported Failure Review Board determining loss of sink plate temperature control due to mismatched Coefficient of Thermal Expansion in sink plate component stack-up



11/18 – 4/19

CONNEX Thermal Engineer*NASA Goddard Space Flight Center / Los Alamos National Laboratory*

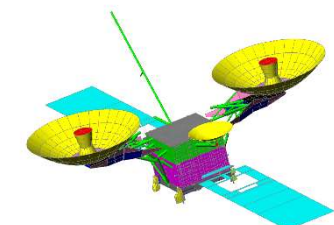
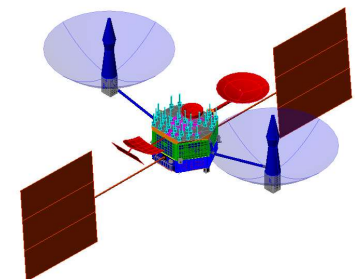
- Developed Thermal Desktop™ Geometric Math Model (GMM) and SINDA/FLUINT Thermal Math Model (TMM) for CONNEX instrument and spacecraft design and presented in Technology Management Review
- Collaborated with interdisciplinary team of engineers to prepare full spacecraft design
- Performed, documented and presented worst case hot/cold thermal analysis results
- Designed spacecraft thermal management system including radiator sizing, heater sizing, optical properties, thermophysical properties, and heat flow for 1000+ kg spacecraft in accordance with NASA GSFC GEVS and Gold Rules
- Designed thermal management system including heat pipes, radiators, and software-controlled heater for Los Alamos Space Accelerator, an instrument that experiences transient 10,000+ Watt heat loads



10/18 – 4/20

Tracking and Data Relay Satellite System (TDRSS) Thermal Analyst*NASA Goddard Space Flight Center*

- Performed updates to Thermal Desktop Geometric Math Model (GMM) and SINDA/FLUINT Thermal Math Model (TMM)
- Performed extensive temperature comparison analysis of on-orbit flight data versus thermal model predictions and implemented additional fidelity to the thermal model to improve model predictions for GEN I, GEN II & GEN III spacecraft
- Developed Microsoft Excel tools to expedite correlation of SC components and overlapping heater zones and presented results to project
- Worked closely with sustaining engineering team to support battery calibration by correlating Thermal Desktop model using flight data
- Assisted Systems engineering in post-eclipse battery charging using Thermal Desktop model(s)
- Predicted thermal response of solar arrays for slew test in order to maintain S/C voltage supply in the event of Bus Voltage Limiter (BVL) anomaly
- Support on-orbit operations, testing, analysis, and anomaly investigations

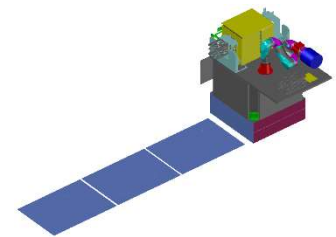
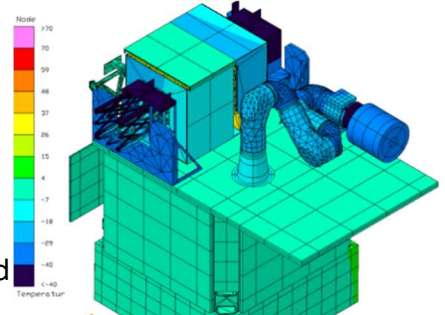


6/20 – 1/21

Archinaut I Thermal Engineer

Made in Space

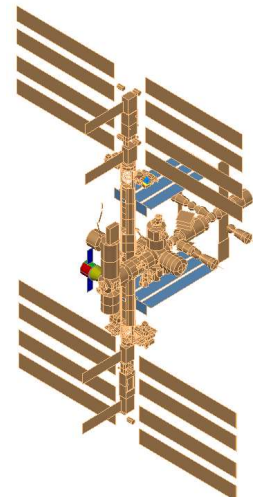
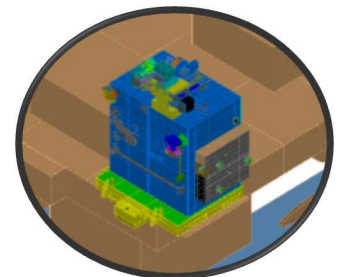
- Developed Thermal Desktop™ Geometric Math Model (GMM) and SINDA/FLUINT Thermal Math Model (TMM) for 3-D Printer
- Supported development of on-orbit 3D printer payload, robot arm, and spacecraft bus for demonstration of novel on-orbit manufacturing
- Modeled all SC assemblies, electronics boxes and mechanisms in Thermal Desktop to perform integrated thermal analysis and flow down interface requirements to assembly vendors
- Performed, documented and presented worst case hot/cold thermal analysis results in support of customer design reviews
Improved design of 3D printing assembly by performing trade studies on heat rejection schemes including **heat straps**, heat pipes, and component optical coatings



2/20 – 6/20

RRM3 Xenon Task Board (RRM3 XTB) Thermal Engineer

- *NASA Goddard Space Flight Center*
- Supported development of the RRM3 task board addition flying on the ISS intended to study a novel method for transferring Xenon propellant without a mechanical pump
- Designed TCS to meet all GEVS/Gold Rules requirements in addition to mission requirements for software-controlled heating and cooling of Xenon tanks between -20°C and 60°C
- Conducted parametric study of effect of ISS attitude on task board sink temperatures to inform the placement and sizing of radiators in a passive cooling scheme
- Performed, documented, and presented worst case hot/cold thermal analysis results to Systems and at PDR
Supported discussions with ISS engineering support to define mission requirements and establish the concept of operations



SKILLS

- Proficient in Thermal Desktop and SINDA/FLUINT
- Proficient in Excel / VBA
- Proficient in Python data analysis and visualization
- Proficient in MATLAB data analysis and visualization
- Experience in ANSYS Workbench, Solidworks, and Creo

OTHER WORK

6/17 – 6/18

Teaching Assistant*University of Maryland Keystone Program*

- Assisted professor in teaching engineering courses by creating and grading homework, coursework, and quizzes as well as holding office hours to address student concerns
- Constructed a demonstration autonomous rover that integrated computer aided design, 3D printed components, motors, remote sensing, PID, and C-based software programming
- Managed a woodshop used by students to build trusses and beams for six months

6/16 – 8/16

Mechanical Engineering Intern*Baltimore Gas & Electric*

- Drafted and edited more than ten technical manuals implemented by field technicians to maintain electric grid components. The process saw the transfer of formats to meet the new parent company standards as well as improve the safety of employees by clarifying ambiguous instructions and emphasizing safety notices
- Audited electric meter database errors in excel to determine work completed and process improvements. Resulting technical report identified and fixed previously unknown database errors that erroneously charged customers
- Interviewed Meter Engineering & Standards employees of 15 person team to create a responsibility matrix that the group manager then used to understand work flow and assign tasks