



LIMITLESS
SPACE INSTITUTE

GO INCREDIBLY FAST

1WHY 2WHO 3HOW

BY RAVE MEDIA





OUR MISSION

Inspire and educate the next generation to travel beyond our solar system and support the **research and development** of enabling technologies.



NON-PROFIT

The Limitless Space Institute is a registered 501(c)3 non-profit organization, established in 2020.



IXS Enterprise arriving at Proxima Centauri b...

WHY LIMITLESS SPACE

ADVANCE HUMAN EXPLORATION

Our vision is to advance human exploration beyond our solar system. As incredible as it may seem, there will be a time, and it may be closer than you think, when we live on other worlds; the Moon, Mars, and in the space between.

To achieve this grand vision we must “Inspire and educate the next generation to travel beyond our solar system and support the research and development of enabling technologies”.

LSI’s Interstellar Initiatives grant program along with our commitment to education and outreach programs are critical components to the discovery of enabling technologies. These discoveries will also spinoff new applications, with potential to benefit our quality of life while ultimately allowing us to traverse vast distances in space, and to do this we need to go fast... *incredibly fast.*

EXPLORATION PROVIDES LIMITLESS OPPORTUNITY

"OPTIMISM IS A FORCE MULTIPLIER" - COLIN POWELL

BEYOND THESE NEW HORIZONS...

From the dawn of humanity, the exploration "gene" has manifested itself in a restless few of every tribe... individuals around the campfire fueled by an inescapable craving to see what lies beyond the horizon... to undiscovered lands and new worlds.

This everlasting itch for things remote, meticulously crafted by natural selection over 400 generations, has provided time and again untold opportunities... **long summers, mild winters, rich harvests, plentiful game...**

Very soon, we will live on other nearby worlds: the moon, Mars, and spaces between. Beyond Mars, distances between worlds grow immensely, and become truly vast between stars. If we want to reach out across these distances, we need to develop the capability to go incredibly fast. For this, we need to look to solutions such as nuclear electric propulsion, fusion propulsion, and the frontiers of physics to develop breakthrough propulsion concepts such as space warps or even wormholes. LSI's research programs along with our commitment to education and outreach programs are critical components to the pursuit and discovery of enabling forms of advanced power and propulsion technologies. The discoveries from this foundational research will spinoff new applications and technologies improving our quality of life and ultimately allowing us to travel to the stars.



- Compact, plentiful, and clean power sources
- Robust solar system transportation capabilities
- Vast resources availability from across our solar system
- Thriving solar system community and economy
- New worlds to explore, both in our solar system and perhaps around nearby stars
- Freedom and opportunity in a Limitless future...

WHY SUPPORT SPACE R&D

A D V A N C I N G O U R Q U A L I T Y O F L I F E

GLOBAL COMMUNICATION

- AT&T Telstar 1 launched 1962 provided first live television broadcast between the United States and Europe
- In 1977, Intelsat IVA satellite enabled first Internet demonstration linking ARPANET, PRNET and SATNET
- Mega satellite constellations (Starlink, OneWeb, Kuiper) beginning to provide ubiquitous global high bandwidth data/comm services

GLOBAL NAVIGATION

- NAVSAT satellite radio navigation system commissioned 1964
- Timation-1 (1967) and Timation-2 (1969) satellites demonstrated atomic clocks in space (critical ingredient for GPS)
- Navstar 1 (first GPS satellite) launched 1978, full constellation of 24 satellites operational in 1993
- Mid-1990's, NASA JPL developed GPS error-correction software allowing position accuracy of ~inches

GLOBAL OBSERVATION

- NASA TIROS-1 first weather satellite launched 1960 allowed observation of planet's weather systems
- NOAA currently operates 16 satellites to monitor earther weather and environment
- USGS currently operates 8 satellites to collect environmental data and imagery of planet
- Commercial providers such as Planet, Decartes Labs, Orbital Insight, Maxar fly constellations of earth observing satellites providing nearly instantaneous global imagery

TECHNOLOGY YOU USE EVERY DAY



Checking the weather forecast to dress and start the day.

- Satellite comm integral part of internet
- Weather forecast based on weather satellite data



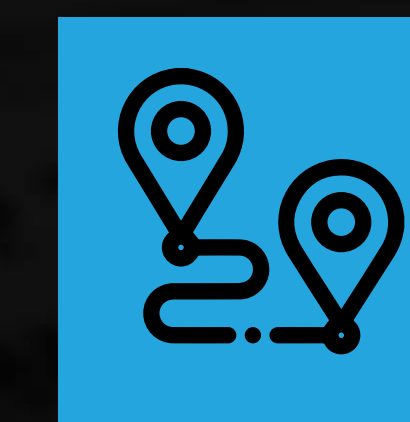
Buying a coffee and breakfast on the way to work.

- Purchase enabled by satellite link between business and bank
- Grain cultivated by GPS-guided farm equipment



Making plans to pick up a friend or relative at the airport.

- Airplane locations tracked via satellite network
- In-flight texting enabled by satellite comm



Finding a restaurant and using your smartphone to navigate there.

- Navigation enabled by GPS satellite network
- Satellite comm integral part of internet

GOALS

DECREASE TRAVEL TIME

State of the Art: Voyager 1 spacecraft would take >70,000 years to reach Proxima Centauri

Nuclear: a spacecraft using nuclear propulsion could reach Saturn in two years, and take another ~2000 years to reach Proxima Centauri

Fusion: a spacecraft with a “sun” for a heart could cross the orbit of Saturn in ~5 months, and reach Proxima Centauri in just over a century

TRAVERSE INTERSTELLAR DISTANCES

Breakthrough: Is there a better way?

If we can build a spaceship that contracts space in front of it, and expands space behind it, this ship could cross enormous distances effectively faster than the speed of light – reaching Saturn in a matter of minutes and Proxima Centauri in less than 6 months.



1 AU (149,597,871 KILOMETERS)
Distance between the Earth and Sun

0.00267 AU
400,171 KILOMETRES

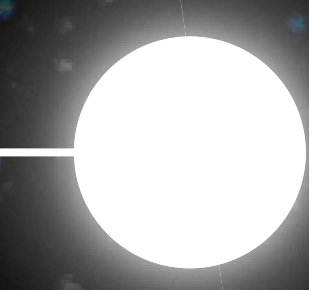
Furthest humans have traveled.
(Far side of the Earth's moon)

150 AU
22,439,680,604 KILOMETERS

Furthest traveled human probe.
(Edge of our Solar System, Voyager II)

276,174 AU
40,208,000,000,000 KILOMETERS

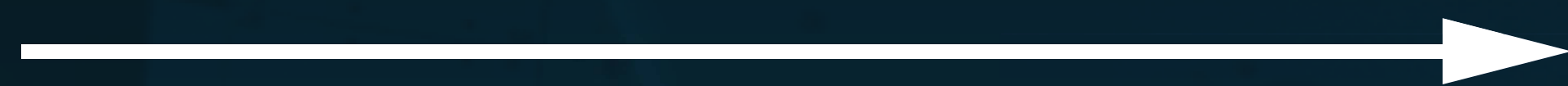
Nearest star system (Proxima Centauri)



SOLVING THE TIME – DISTANCE CHALLENGE

FISSION

NUCLEAR ELECTRIC
PROPULSION (NEP)



⏻ Power: **2 - 50 MW**

🚂 Locomotives: **1 - 25**

- Enables human exploration of outer solar system.
- Enables interstellar precursors ~1000 AU

1,000_s
OF YEARS

TRAVEL TIME TO PROXIMA CENTAURI



PHYSICS



ENGINEERING

FUSION

FUSION ELECTRIC
PROPULSION (FEP)



⏻ Power: **50 - 500 MW**

🚂 Locomotives: **25 - 250**

- Enables faster human exploration of outer solar system.
- Enables slow interstellar

100_s
OF YEARS

TRAVEL TIME TO PROXIMA CENTAURI



PHYSICS



ENGINEERING

BREAKTHROUGH

SPACEDRIVES, WORMHOLES,
SPACE WARPS



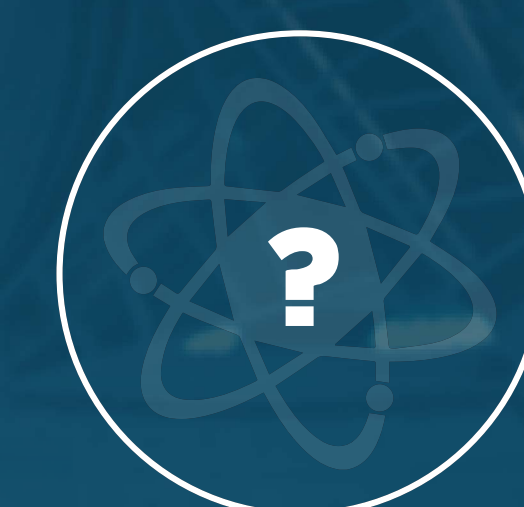
⏻ Power: **>500 MW**

🚂 Locomotives: **>250**

- Enables fast interstellar

A FRACTION
OF A LIFETIME

TRAVEL TIME TO PROXIMA CENTAURI



PHYSICS



ENGINEERING

Advance human exploration beyond our solar system,
while adhering to our core values of integrity, courage
and imagination.



NON-PROFIT

The Limitless Space Institute is a registered 501(c)3 non-profit organization, established in 2020.

WHO GOVERNANCE

LSI Leadership Team is composed of a President, a Director of Advanced Research and Development, and a Chief Advancement Officer.

The President manages, directs, and leads day to day efforts of the Institute. The President establishes priorities, determines distribution of resources and work efforts, identifies Advisory Board members, and reports to the Board of Directors.

The Director of Advanced Research and Development leads all research and development work for the Institute, identifies and leads a Technical Advisory Committee and reports to the President.

The Chief Advancement Officer leads all efforts to secure financial resources, LSI Communications & PR, guides the Board of Advisors in achieving our annual goals and reports to the President.



BRIAN "BK" KELLY
PRESIDENT



**DR. HAROLD
"SONNY" WHITE**
DIRECTOR OF ADV. R&D

BOARD OF DIRECTORS

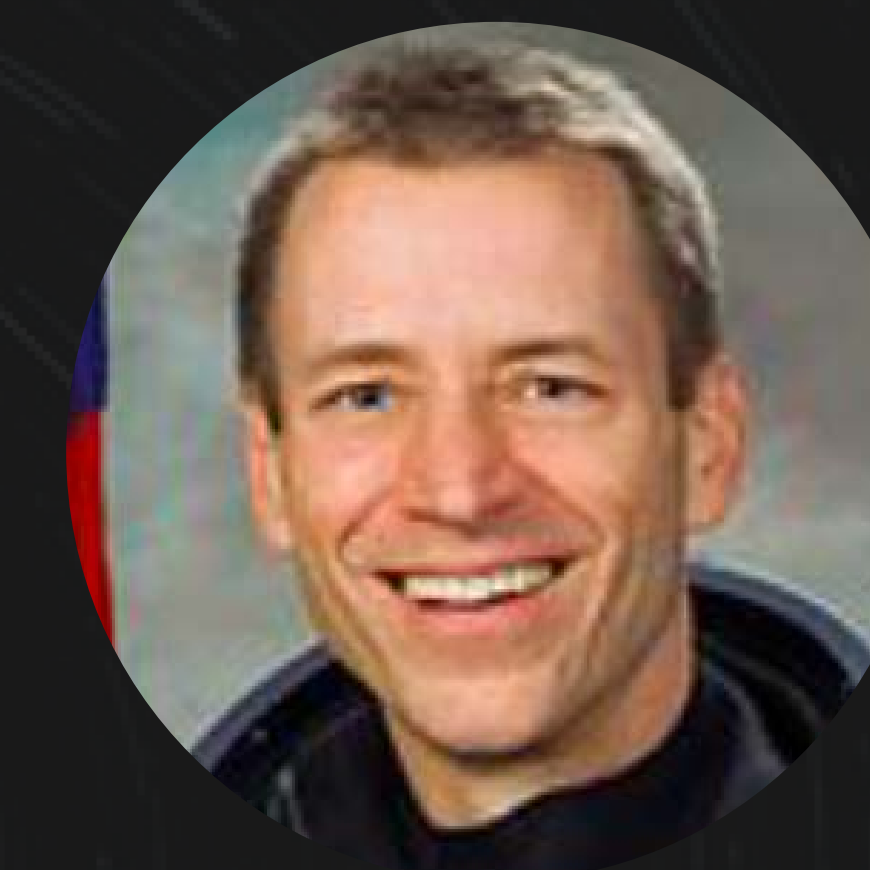
LSI is governed by a Board of Directors with day-to-day operations led by a President with each board member having decades of leadership experience in industry and government human space flight operations, research and development, and space policy.



KAM GHAFFARIAN
CHAIRMAN



BRIAN "BK" KELLY
TREASURER



**GREGORY CARL
"RAY J" JOHNSON**
SECRETARY

HOW

PROGRAMS

LSI provides support in the form of internships, scholarships, fellowships, and post docs.

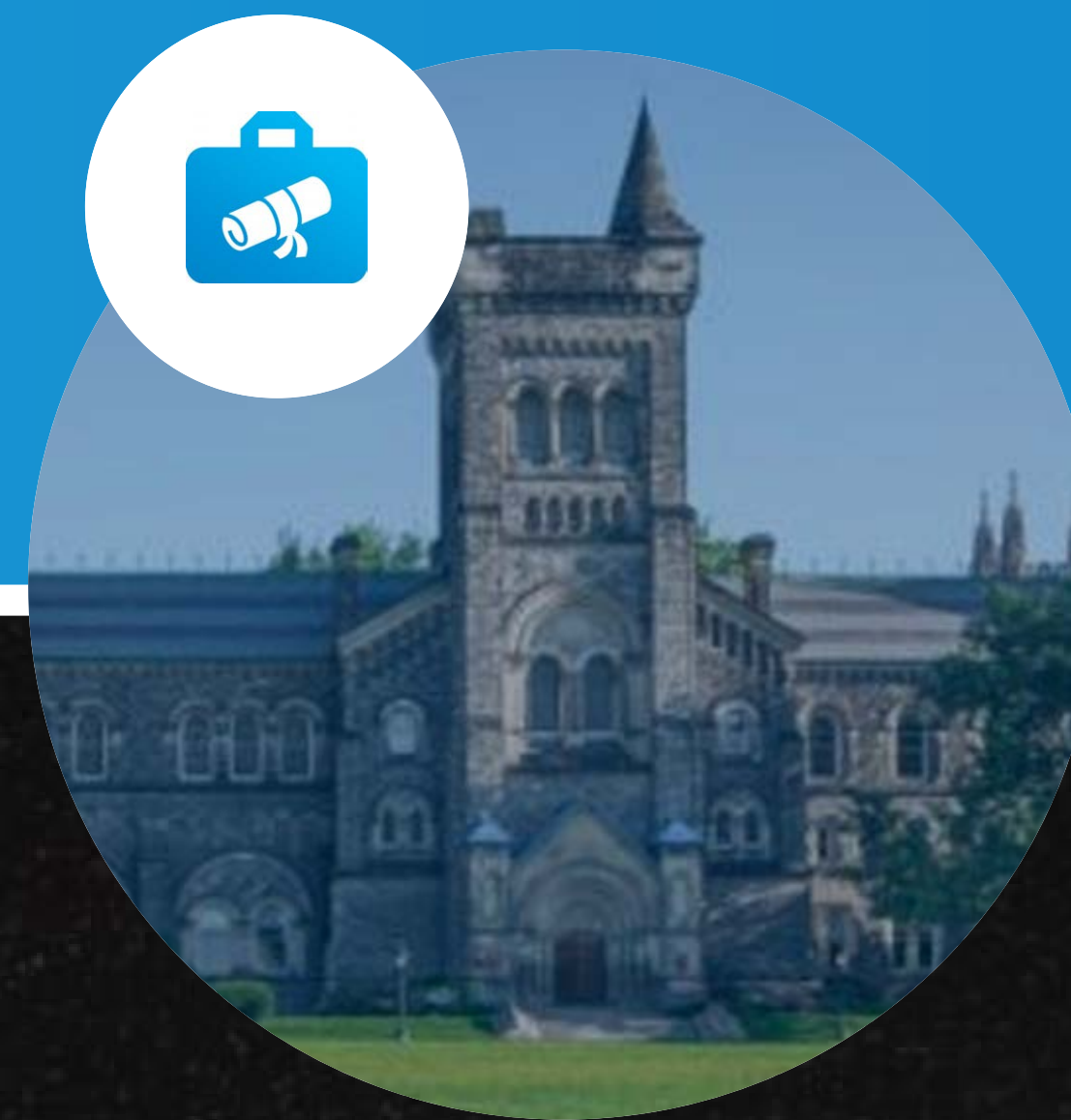
LSI will conduct and fund applied research & development emerging from frontiers of physics and engineering as they apply to enabling fast interstellar transit.

Interstellar Initiative Grants (I² Grants): As part of the institute's inauguration, LSI will be offering a series of research grants through the I² Grants program.



EDUCATION OUTREACH & STUDENT PROGRAMS

We engage academic student communities at all ages to inspire and educate future generations.



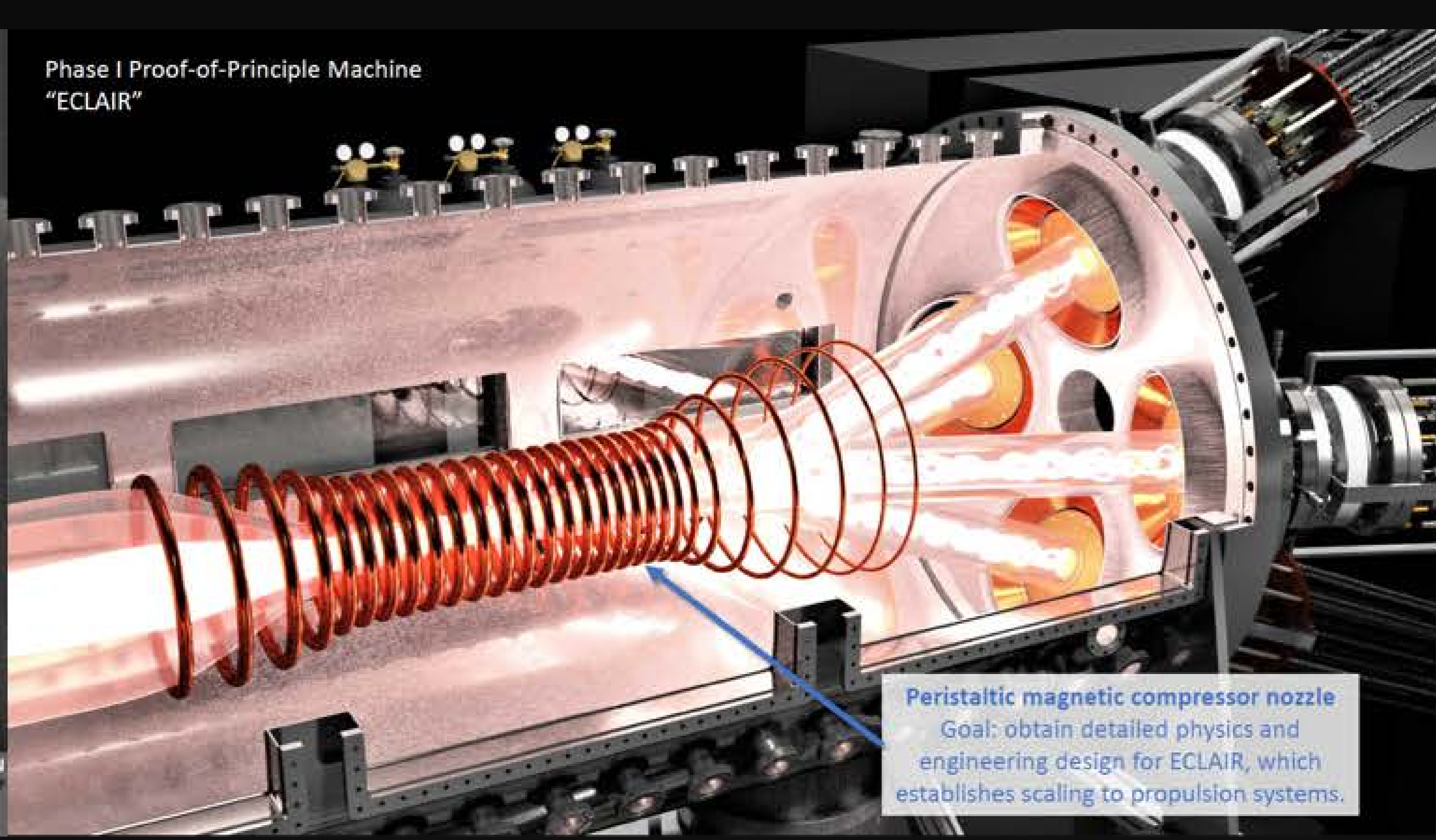
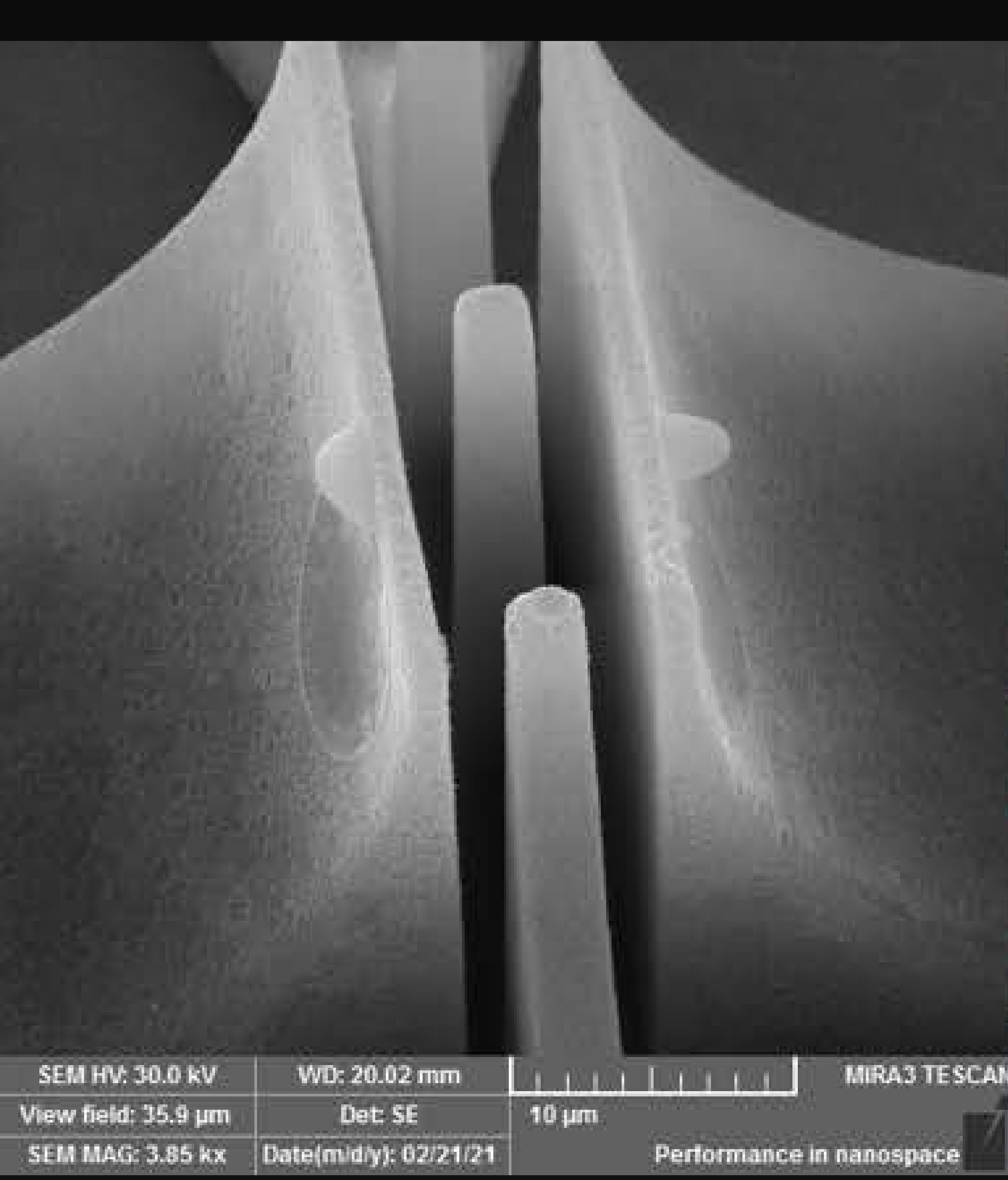
UNIVERSITY & CORP PARTNERSHIPS

We partner with universities and corporations to pursue mutual areas of interest related to space exploration.

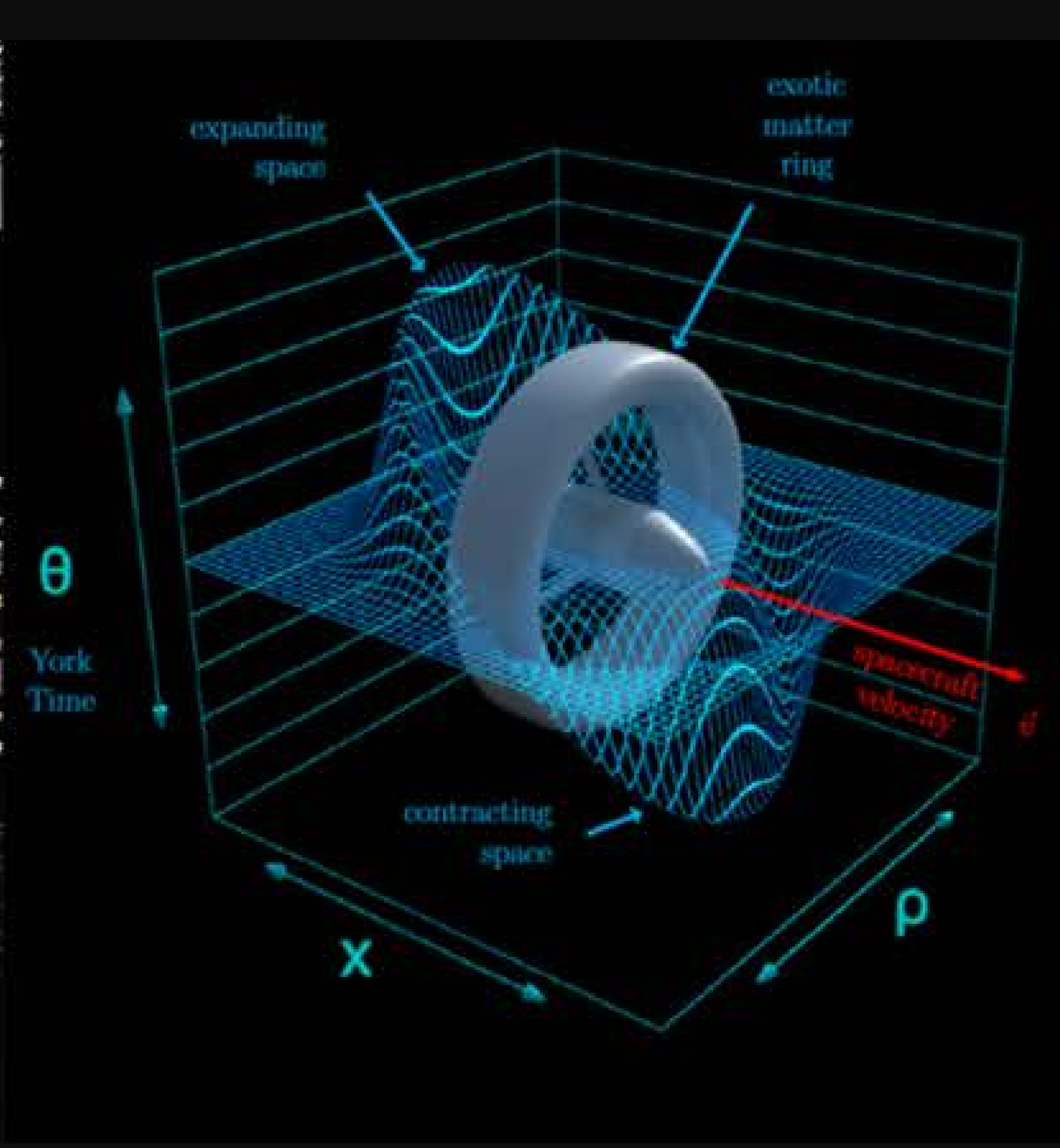


INTERSTELLAR TRAVEL R&D

We conduct and fund applied R&D to enable bold human exploration of the solar system and beyond.



Peristaltic magnetic compressor nozzle
Goal: obtain detailed physics and engineering design for ECLAIR, which establishes scaling to propulsion systems.



Grants & Fellowships

Support global academic community conducting R&D of advanced power and propulsion concepts.



Educator Program

Partner with global K12 educator community to develop inspiring teaching materials and lessons for classrooms.



Eagleworks

Onsite scientific lab facilities exploring frontiers of physics to enable new forms of power and propulsion.

University Partnerships

Partner with universities to jointly pursue mutual areas of interest.

Lab Boosters

Internships

Summer Classes

Public Lectures

Scholarships





(INTERSTELLAR-JPL: EDUCATION/APPLIED R&D)
LSI IN 10 YEARS

\$500 million in assets, \$100 million annual operation budget

120,000 ft² office and classroom facility surrounded by ~120,000 ft² laboratory facilities to support R&D


Average 200 scientists/engineers in residence conducting research, support 1000+ visiting scientists/engineers annually

Annually host:

- 50 postdoc students
- 50 PhD. students
- 30 grad students for grad course
- 30 internships
- 40 high school students for summer course

Cumulatively:

- Published 5000+ papers in journals
- Posted over 10,000 talks online
- Over 40,000,000 student interactions



Imagination will often carry us to worlds that never were.
But without it we go nowhere.

Infinite possibilities come to those who **believe**.

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CONTACT

INFO



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(281) 339-7800

Our ultimate goal is to **achieve interstellar human space travel** by the end of this century.

PLEASE CONTRIBUTE TO INSPIRE AND EDUCATE THE NEXT
GENERATION TO TRAVEL BEYOND OUR SOLAR SYSTEM

THANK YOU