

# JEWES IN SPACE

## MEMBERS OF THE TRIBE IN ORBIT

### Space in Maryland Map

Thanks to a large number of colleges and universities, as well as our location near the home of the federal government, Maryland has been a leader in space technology since the mid-20th century, and our connections to astronomical research are even older.

Whether you're looking for important observatories, innovative inventors, or a space-worthy education, your options stretch from the western counties to the I-95 corridor to the Eastern Shore.

**Below is a list of the items displayed on the online map.**

### Local Connections

- **Baltimore:** Astronaut Marsha Ivins was born in Baltimore in 1951.
- **Judith A. Resnik Elementary School:** Part of Montgomery County Public Schools. Opened 1992 and named after Astronaut Judith A. Resnik. When Judith A. Resnik (1949-1986) participated as a mission specialist on STS 41-D, on August 30, 1984, she became both the first Jewish American and the first Jewish woman of any nationality to go to space. Though Dr. Resnik grew up in California, she had Maryland ties: while working toward her doctorate in Electrical Engineering from the University of Maryland, she spent three years as a biomedical engineer and staff fellow in the Laboratory of Neurophysiology at the National Institutes of Health in Bethesda. Shortly after earning her doctorate degree, she was selected as an astronaut candidate by NASA in January 1978. During her NASA career, she logged 145 hours in space. Tragically, Dr. Resnik was one of the six crew members onboard STS 51-L – the Space Shuttle Challenger – when it exploded, 1 minute and 13 seconds after launch, on January 28, 1986.
- **Dr. Sally K. Ride Elementary School:** Named after the first American woman in space in 1983, this elementary school is part of Montgomery County Public Schools.
- **S. Christa McAuliffe Elementary School:** Part of Montgomery County Public Schools, this elementary school was named after Christa McAuliffe, who was selected to be the first teacher in space.
- **Ronald McNair Elementary School:** With a rocketship as its logo and the motto of "soaring to new heights," it is clear that the school embraces its namesake. Part of Montgomery County Public Schools.
- **Western High School:** "The Mother of Hubble," astronomer Nancy Grace Roman (1925-2018), has strong Maryland ties: not only did she live in the DC suburbs as an adult, but

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she also attended Baltimore's Western High School, graduating in 1943. Roman was the first woman executive at NASA, serving as Chief of Astronomy in NASA's Office of Space Science at Goddard, among other positions during her long career. She championed the idea of space-based astronomy, in which instruments like satellites and telescopes operate from space rather than the earth's surface, and is best remembered today for her work in shepherding the Hubble Space Telescope program to viability. After retiring, she went on to teach astronomy to school children in the DC area. Roman received many awards, from the Women in Aerospace Lifetime Achievement Award to the NASA Exceptional Scientific Achievement Award; she also has an asteroid named for her, and she was one of the four Women of NASA featured in a recent LEGO set.

- **Baltimore Polytechnic Institute:** Dr. Samuel I. Katzoff (1909-2010), "one of the leaders of theoretical and analytical studies for the NACA and NASA" and a renowned technical writer, was born and raised in Baltimore, son of Lithuanian Jewish immigrants. He attended Baltimore Polytechnic High School and then Johns Hopkins University, where he earned degrees in chemistry. After taking the civil service exam, he was offered a job at the Langley Laboratory of the National Committee for Aeronautics (NACA), in Virginia. He stayed at Langley for several decades, but after his 1974 retirement he returned to Baltimore and became involved with the Johns Hopkins' Center for Talented Youth, where he taught science, and developed curricula in logical thinking.
- **Woodlawn High School:** Astronaut Robert Curbeam, class of 1980
- **Kenwood High School:** Astronaut Thomas David Jones, class of 1973
- **Oakland Mills High School:** Astronaut Terry Virts, class of 1985
- **Dulaney High School:** Astronaut Reid Wiseman, class of 1993
- **Bowie High School:** Astronaut Richard R. Arnold, class of 1981
- **Charles W. Woodward High School:** Lisa Nowak, class of 1981. (Woodward High School closed in 1987. The building now houses Tilden Middle School.)
- **Frostburg State University:** Astronaut Richard R. Arnold, class of 1985. BS, Accounting
- **University of Maryland:** Astronaut Richard R. Arnold, class of 1992. MS Marine, Estuarine, & Environmental Sciences
- **University of Maryland:** Astronaut Judith Resnik, class of 1977. PhD Electrical Engineering
- **Mitchelson Hall, US Naval Academy:** Named after Albert A. Michelson, physicist and inventor. After graduating from the U.S. Naval Academy in Annapolis in 1873, he stayed on for several years to teach physics and chemistry, and begin his experiments in the speed of light. By measuring the velocity of light – i.e., the "c" in  $E = mc^2$  – Michelson enabled Einstein's theory of relativity. Among many other accomplishments throughout his career, he was the first American to be awarded the Nobel Prize in Physics (1907) for "his optical precision instruments and the spectroscopic and metrological investigations carried out with their aid."
- **Montgomery College:** One of award-winning astronomer Vera Cooper Rubin's first jobs out of school was teaching Mathematics and Physics at Montgomery College in suburban Maryland. She went on to have a long and important career in astronomy at the Carnegie

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Institute. Despite the sexism she often encountered in the field (she was only the second woman astronomer elected to the National Academy of Science), she was dedicated to helping pave the way for other women in astronomy and science. The newly-named NSF Vera C. Rubin Observatory is the first national US observatory to be named in honor of a woman.

- **Johns Hopkins University:** Nobel laureate Adam Riess (b. 1969), an astronomer at the Space Telescope Science Institute and a Bloomberg Distinguished Professor in Space Studies, Astronomy and Physics at the Johns Hopkins University (both in Baltimore).
- **Patuxent River:** Astronaut Kenneth S. Reightler, Jr. born 1951. He later attended US Naval Test Pilot School here.

### Science Fiction Connections

- **Baltimore Science Fiction Society:** Founded in 1963, the original group held the first Balticon in 1968. The current organization was founded in 1974. "The Baltimore Science Fiction Society exists to promote the creation and appreciation of science fiction and fantasy cultural arts"
- **Science Fiction & Fantasy Special Collections, Albin O. Kuhn Library, UMBC:** The Science Fiction & Fantasy Special Collection includes the Azriel Rosenfeld Science Fiction Book Collection, the Coslet-Sapienza Fantasy and Science Fiction Fanzine Collection, and manuscript collections for many local and national authors.
- **Ivy Bookshop:** In September 2019, local sci-fi/fantasy author Sarah Pinsker launched her first novel, *A Song for a New Day*, with an event at the Ivy Bookshop. Nebula Award-winner and Baltimore's own Sarah Pinsker has been writing science fiction since she was a child, influenced by the bookshelves of her parents. (Her father is Rabbi Larry Pinsker of Beit Tikvah.) Her story collection, *Sooner or Later Everything Falls into the Sea*, examines a variety of themes through a sci-fi lens; she told the Baltimore Jewish Times, "They're still human stories, but [with science fiction] there are just more tools to tell them."
- **Mount Moriah Lodge, Star Trek Association of Towson Meeting Place:** Founded in 1978, the Star Trek Association of Towson is a club for Science Fiction fans in the Towson area and beyond.
- **Delta Hotels Baltimore Hunt Valley, Shore Leave Convention Site:** Shore Leave is a fan-run Science Fiction media convention. The annual convention "features appearances by actors and writers from a broad variety of TV shows and movies ranging from current hits to classic favorites."
- **Renaissance Baltimore Harborplace Hotel, Balticon 55 Site:** The Maryland Regional Science Fiction and Fantasy Convention, is known as Balticon. Balticon 1 was hosted at The Emerson Hotel in 1967. While Balticon 54 (2020) was an entirely virtual event, Balticon 55 (2021), is scheduled to take place at the Harborplace Hotel.

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## Observatories

- **Nanjemoy Creek Observatory, Nanjemoy Creek Environmental Education Center:** Built in 1998, the observatory is operated by the Southern Maryland Astronomical Society. "The members meet '... to secure the pleasures and benefits of an association of persons interested in amateur astronomy,' and '... to promote the science of astronomy.'" Learn more about the society here: <https://www.smas.us/>
- **Blaine F. Roelke Memorial Observatory, Bear Branch Nature Center:** Built in 2015, the observatory is operated by the Westminster Astronomical Society, "bringing the universe to Carroll County, Maryland since 1984." Learn more here: <http://www.westminsterastro.org/observatory/>
- **University of Maryland Astronomy Observatory:** Built in 1963/4, the observatory is part of the Department of Astronomy, University of Maryland College Park. This observatory is still in operation today. Learn more: <http://www.astro.umd.edu/openhouse/>
- **Crosby Ramsey Memorial Observatory, Maryland Science Center:** Founded in 1797 as the Maryland Academy of Sciences, Maryland's oldest scientific institution includes the Crosby Ramsey Memorial Observatory, home to a restored 1927 telescope originally used at Baltimore's Pratt Library. Explore more here: <https://www.mdsci.org/explore/science-encounters/observatory/>
- **International Latitude Observatory:** The Observatory built as part of an international project to measure the earth's wobble on its polar axis. It operated from 1899 to 1982. Learn more about its history here: <https://www.gaithersburgmd.gov/home/showdocument?id=3330>
- **Montgomery College Astronomical Observatory:** Montgomery College's astronomical observatory is located on the roof of the Rockville Science Center. The observatory is used for student research, education and public outreach. Learn more here: <https://www.montgomerycollege.edu/academics/stem/science-engineering-technology/observatory.html>
- **Anne Arundel Community College Radio Telescope:** Built in 2013, the college's Observatory, located in the back of Parking Lot B behind the annex buildings. It is in use today, hosting events for Astronomy Club members, faculty and community members.
- **Williams Observatory, Hood College:** Hood College was founded in 1893 as the Women's College of Frederick. A bequest from M. Janet Williams, in honor of her father, led to the construction of Williams Observatory in 1924. For many decades the only observatory in Western Maryland, the 8-inch Clark telescope served generations of young women studying astronomy under the guidance of long-time director and astronomer Leah Brown Allen (1884-1973). Today, light pollution makes sky watching difficult, but the Williams Observatory is opened when conditions are favorable. Learn more about the history of the observatory and community events here: <http://125.hood.edu/portfolio/williams-observatory><http://125.hood.edu/portfolio/williams-observatory/>

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- **Harford Community College Observatory:** The Harford County Astronomical Society, founded in 1970, regularly holds open house viewings at the observatory, located on the HCC campus. Learn more about the society here: <https://harfordastro.org/>
- **St. John's College Observatory and Planetarium:** The McKeldin Planetarium and the St. John's College Observatory are located on St. John's Annapolis campus. <http://199.89.180.250/~stars/index.html>
- **Northwood Observatory:** Toy manufacturer and amateur astronomer, Joseph L. Woods built a private observatory on the rooftop of his Northwood home in 1937. The observatory was in use until he sold the house to new owners in 1960.
- **Morris W. Offit Telescope, Maryland Space Grant Observatory:** The telescope is located under the Stanley D. and Joan F. Greenblatt Dome, on the roof of the Bloomberg Center for Physics and Astronomy, on the Homewood Campus of The Johns Hopkins University. Learn more here: <https://md.spacegrant.org/>
- **Arthur Storer Planetarium:** This planetarium at Calvert High School was named for Arthur Storer (ca. 1642-1686), America's first Colonial astronomer, who settled in Calvert County. He was one of the first to record data on Halley's Comet (then known as Storer's Comet) as it passed over Maryland in 1682.
- **Planetarium at Hickory Environmental Education Center:** Planetarium at Hickory Environmental Education Center is one of over two dozen educational planetariums scattered across the state, the Hickory Planetarium introduces Garrett County school students to space and earth sciences.

### Educational Institutions

- **University of Maryland Department of Aerospace Engineering:** Founded in 1949, when the aeronautical sciences discipline was separated from the mechanical engineering department. You can read about their notable alumni here: <https://aero.umd.edu/alumni-industry/distinguished-alumni>
- **Space Systems Laboratory, University of Maryland:** The Space Systems Laboratory (SSL) is part of the Aerospace Engineering Department and A. James Clark School of Engineering at the University of Maryland in College Park. The SSL is home to the Neutral Buoyancy Research Facility, a 50-foot diameter, 25-foot deep water tank that is used to simulate the microgravity environment of space - the only such facility in the world housed at a university. (<https://ssl.umd.edu/>)
- **Challenger Learning Center at Howard B. Owens Science Center:** A not-for-profit formed by the family members of the Challenger crew, who died tragically on the morning of Jan. 28, 1986, when a booster engine failed. "Challenger Center and its global network of Challenger Learning Centers use space-themed simulated learning and role-playing strategies to help students bring their classroom studies to life and cultivate skills needed for future success, such as problem solving, critical thinking, communication and teamwork." (<https://www.challenger.org/>)

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- **US Naval Academy Aerospace Engineering Department:** "The program is structured to produce naval officers who will meet the challenges of serving in such areas as naval aviation, space, and research." (<https://www.usna.edu/AeroDept/index.php>)
- **Capitol Technology University:** Offers a Bachelor's of Science (BS) in Astronautical Engineering. CTU is also home to the Center for Space Science Education and Public Outreach. Learn more here: <https://www.captechu.edu/fields-of-study/engineering-and-engineering-technologies>
- **Spaceflight America Museum and Science Center, Volanz Aerospace Inc.:** Volanz is a non-profit dedicated to space science education. Founded 1998; the museum opened in 2014. Learn more here <http://www.spaceflightamericamuseum.org/>
- **JHU Space Systems Engineering:** Offers a Master of Science (MS) in Space Systems Engineering.
- **UMBC Department of Physics:** The department's research is centered in 4 main areas: astrophysics, atmospheric physics, condensed matter physics, and quantum optics and quantum information. (<https://physics.umbc.edu/>)
- **Engineering & Aviation Sciences at University of Maryland Eastern Shore:** Offers BS in engineering with specialization in aerospace.
- **Baltimore SEMAA (Science Engineering Mathematics & Aerospace Academy) at Morgan State University:** This NASA program provides STEM enrichment for Maryland students. Several public school systems around the state offer aviation, engineering, and aerospace programs at the high school, middle school, and even elementary school levels.
- **Aerospace Engineering and Aviation Technology at DuVal High School:** Park of Prince George's County Public Schools. Learn more here: <https://www.pgcps.org/aerospace-engineering-and-aviation-technology/>
- **Parkland Magnet Middle School for Aerospace Technology:** Part of Montgomery County Public Schools. Learn more here: <https://www2.montgomeryschoolsmd.org/schools/parklandms/>
- **Aerospace Engineering Academy at Applications and Research Laboratory:** Part of Howard County Public Schools.
- **Aviation and Aerospace Program at Magruder High School:** Part of Montgomery County Public Schools
- **The Jewish Museum of Maryland:** Jews in Space: Members of the Tribe in Orbit (Fall 2020 to Spring 2021)

## Industries

- **JHU Applied Physics Laboratory 1942-1975:** The APL opened in Silver Spring during World War II, under the federal Office of Scientific Research and Development.
- **JHU Applied Physics Laboratory 1954-today:** The Laurel location opened in the 1950s, and today it is a research division of Johns Hopkins University. Over the decades, APL

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engineers have built and operated spacecraft for numerous missions.

(<https://ep.jhu.edu/about-us/locations/applied-physics-laboratory>)

- **NASA Goddard Space Flight Center:** Established in 1959, Goddard is home to the Nation's largest organization of combined scientists and engineers dedicated and sharing their knowledge of the Earth, Sun, Solar System, and Universe."  
(<https://www.nasa.gov/centers/ames/greenspace/goddard.html>)
- **Space Science Telescope Institute 1981-today:** Established in 1981 and operated by the Association of Universities for Research in Astronomy. Space Telescope Science Institute (STScI) is a research institute that conducts the science operations for the Hubble Space Telescope and the James Webb Space Telescope (JWST), planned to launch in 2021. Explore more here: <https://www.stsci.edu/>
- **Adcole Maryland Aerospace:** Maryland Aerospace, Inc., founded in 2002, was one of many manufacturing businesses in central Maryland building spacecraft components for Goddard, Lockheed Martin, and other local aerospace companies. Though it has merged several times and is now known as Adcole Space, it still maintains an office in Crofton. (<https://www.adcolemai.com/>)
- **Emergent Space Technologies:** Founded in 2001, Emergent Space Technologies is an industry leader in the development of "flight software for multi-spacecraft missions, including constellations, formations and clusters of small satellites." Explore more here: <https://www.emergentspace.com/>
- **Hughes Network Systems:** Hughes Network System is founded as Digital Communication Corp (DCC) in Rockville specializing in broadband satellites. Currently, Hughes is headquartered in Germantown. Learn more about Hughes here: <https://www.hughes.com/about>
- **Hawk Institute for Space Sciences:** Founded in 2006, Hawk Institute for Space Sciences provides aerospace engineering services and integrated aerospace solutions. The first HISS satellite, Hawksat-1, was launched in May 2009. Learn more here: <http://www.hawkspace.org/index.php>
- **Carr Astronautics:** Founded in 1991, Carr Astronautics is "is dedicated to advancing science and engineering through forward-leaning solutions." Learn about their projects here: <http://www.carrastro.com/?q=node/93>
- **COMSAT Laboratories:** COMSAT began as a federally funded communications satellite company in the early 1960s. In 1969 the R&D branch, COMSAT Laboratories, moved from DC to a state-of-the-art building in rural Montgomery County. Hundreds of satellite-related patents were developed at COMSAT over the decades before the lab was sold in 2000.
- **Lockheed Martin Headquarters:** A global security and aerospace company whose space branch "includes space launch, commercial satellites, government satellites..." Learn more about the company on their website: <https://www.lockheedmartin.com/en-us/who-we-are.html>

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