



NASA WEST VIRGINIA SPACE GRANT CONSORTIUM WV Space Connections

AFFILIATES

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NASA IV & V

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Message from the Director

Dear Friends,

It is my pleasure to have this opportunity to welcome you to another edition of WV Space Connections. Thanks to the dedication and hard work of our faculty, our affiliates, our Board Members and our colleagues, the Space Grant Consortium and NASA EPSCoR continue to expand their coverage and services in West Virginia.



2012 Spring Board of Directors meeting held in Charleston, WV.

I am pleased to welcome Ms. Anne Barth, Executive Director of TechConnect WV to our Board. We are looking forward to her contribution and guidance in shaping the future of the Consortium. I would also like to take this time to express our deep gratitude to Mr. Denny Avers and Dr. Robert Paysen as they leave the Consortium's Board of Directors. Their invaluable contributions as founding members of the Consortium is greatly appreciated. We wish them well in their future endeavors.

Finally, I would like to congratulate our 2012—2013 NASA Scholars at the affiliate level. I wish them the best in their research career and look forward to their future participation in our programs.

WVSGC Staff:

Majid Jaridi, Ph.D., Director
Candy Cordwell, M.S., Program Manager

West Virginia University
Room G-68 Engineering Sciences Building
P.O. Box 6070
Morgantown, WV 26506

Please visit our website: www.nasa.wvu.edu

Upcoming Events in 2013

April 5 & 6

NASA WV Space Grant Board of Directors Meeting in Charleston, WV

April 10

8th Grade Career Day at Expo Center

June 12-14

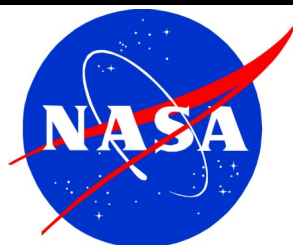
Fifth Annual Aviation Summer Camp at West Virginia University

July 10-17

Seventh NAIC/NRAO Single-Dish Summer School at Arecibo Observatory

August 9-17

WV State Fair in Lewisburg, WV



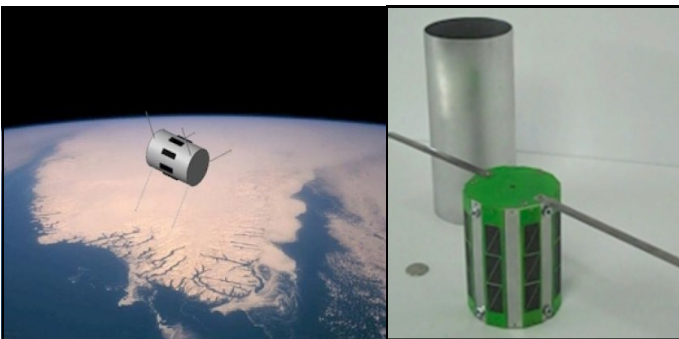
A New Space Hardware Program Open to Students in all WV Colleges

D. Vassiliadis, Physics Department, West Virginia University

Space achievements are on everyone's mind these days. Many young people, and students in particular, dream of exploring, or working in, near-Earth space. The Space Flight Design Challenge is a new program to help them do exactly that, specifically at an altitude of 200 miles. The program was originated in fall 2012 by the NASA WV Space Grant Consortium, in collaboration with NASA Independent Verification and Validation (IV&V) Facility in Fairmont and WVU Physics Department. The program provides a space experiment opportunity to science and engineering students at a number of universities across the state. Participants can design and build a novel cool instrument and launch it in space on a small cylindrical satellite, or tubesat, provided by a NASA contractor.

This year there are four participating teams led by professors in their campuses. They are Marshall University headed by Prof. Howard Richards; Wesleyan College, with Prof. Trevor Stevens and Prof. Tracey Delaney; Shepherd University headed by Prof. Seung-Yun Kim, and the WVU Institute of Technology with Prof. Farshid Zabihian. In most cases the supervising professor has invited along additional faculty to give greater flexibility to students in drawing up and constructing their tubesat. Team members come from many different branches of science, engineering, math, and technology (STEM) programs on a campus. In fact studies show that the more diverse the student group is the better it can handle the various project challenges. For students interested in space, this is a project where they can get creative, apply principles learnt from earlier courses, and interact with students from other departments across campus and in the state.

Some students start out by joining a SPACE chapter (Student Partnership for the Advancement of Cosmic Exploration, www.studentsforspace.org). In some campuses these chapters were initiated in fall 2012 as part of the same initiative, and have attracted students from all disciplines related to astronomy and space. Currently there are five chapters in this organization and its founders at WVU would like to see every university and college in the state to have their own chapter.



Depiction of a tubesat designed to fly in a polar low-Earth orbit will host experiments from university teams across the state.

Beyond participating in SPACE, students involved in building the instruments, or "payload", gather weekly in a lab to design, fabricate and test the components which have to fit in the 5-in-long tubesat. They consult with their advisors about the challenges of the space environment, the feasibility of their project, and new fascinating technologies some of which were unimaginable on a campus setting until a few years ago. Some students have significant experience in art and graphic design; some are good in robotics; business majors may contribute planning and project management; and English majors excel in communications, and the project's website.

The Shepherdstown team has considerable experience in robotics which can be put to good use; in Wesleyan, students and faculty plan to design an experiment to answer fundamental questions about the Earth's environment and geologic processes. After the basic design is decided on, components are sought on the market and the actual construction begins. Off-the shelf components are adapted and combined for new goals. Testing each part as well as the integrated system is necessary at every stage of the project.



WV Wesleyan College participants Dr. Trevor Stevens and Russell Gillespie at the first OC-Flight-1 meeting in Morgantown, WV.

Students are excited about the opportunity to fly their own design in space.

Wes Gosselink of WVU Tech says, "the design challenge has been a great learning opportunity for me.

The topic sometimes seems well outside of my training in mechanical engineering, but I have learned a great deal about project management and interdisciplinary work".

Much of the cost of components is covered by NASA WV Space Grant Consortium while guidance on space science and engineering is provided by WVU Physics (Prof. D. Vassiliadis) and NASA IV&V Facility (Steven Hard). Students from all WV campuses are encouraged to contact the program organizers.

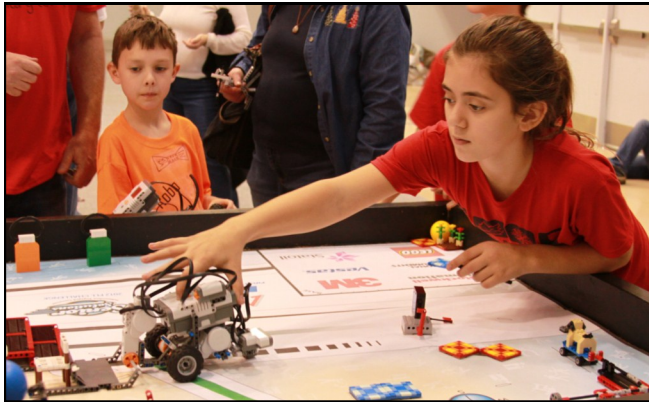
For more information on starting a SPACE chapter in your university or getting involved in a spaceflight project, please contact Prof. Majid Jaridi at Majid.Jaridi@mail.wvu.edu for organizational issues and Prof. Dimitris Vassiliadis at Dimitris.Vassiliadis@mail.wvu.edu for science and technology issues.

Fairmont State University hosts FIRST LEGO League Competition



ISSUED: 30 November 2012
 MEDIA CONTACT: Todd Ensign

The 2012 FIRST LEGO League (FLL) State Championship, sponsored by NASA IV&V, was held at Fairmont State University's main campus. This year's tournament theme was Senior Solutions which required students to assemble robots with LEGO® technology and use them to compete to accomplish tasks involved in a real-world scenario. The teams also presented research and programmed their robots in a series of challenges based on improving the quality of life for seniors by helping them continue to be independent, engaged and connected in their communities.



Students practice maneuvering their robots through obstacle courses before the completion.

The teams were judged on a presentation of their research, an activity which displayed the team's core values, a presentation of their robot design and table competitions which required them to maneuver their robots through an obstacle course. Prizes were presented in all four areas, with one team earning the right to represent West Virginia at the international FLL tournament, set for St. Louis this coming spring.



Teams compete by maneuvering their robot through an obstacle course in the Falcon Center and Fairmont State University

"FIRST Lego League provides an unique opportunity for young people to have fun while learning. It inspires those involved and lets them experience teamwork in accomplishing a technological objective. We want children to experience science, technology, engineering, and mathematics from a hands-on perspective, and hopefully create a new cadre of future engineers and scientists," said Dr. Anthony F. Gilberti, Dean of the College of Science and Technology at FSU. The FLL, in partnership with LEGO®, is part of the For Inspiration and Recognition of Science and Technology (FIRST) organization, an international nonprofit agency with the mission of promoting interest in science and technology.

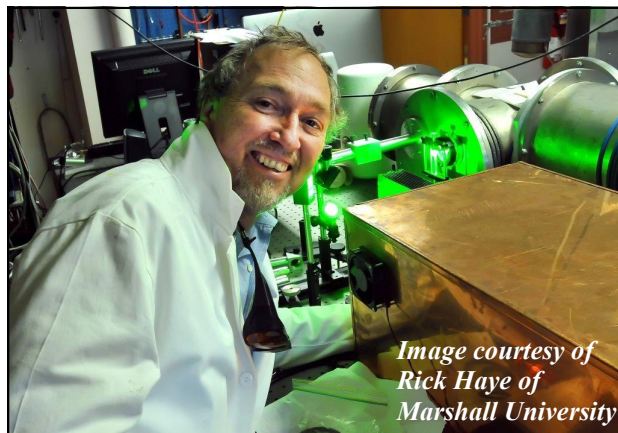


Marshall University Professor to Present Work at APS

Dr. Thomas E. Wilson will report at the American Physical Society (APS) meeting in March 2013 on a new high-power terahertz laser line that he has produced in S154. He plans to submit a journal article to *Reviews of Scientific Instruments* after this meeting. This is the first such 50-kW, 5-ns terahertz lasing produced from cavity-dumping.

The scientific program link to Dr. Wilson's abstract can be found here: <http://meetings.aps.org/Meeting/MAR13/Event/189749>

Pictured by the output side of the terahertz laser, Dr. Wilson explains that the green light is produced by a frequency-doubled YAG laser housed beneath the copper Faraday cage – the output of which 'cavity-dumps' that his custom 'CO2 TEA laser pumped, methyl fluoride laser' produce the 50-KW nanosecond pulses of 1.04 terahertz radiation, about which he will be reporting next month.



*Image courtesy of
Rick Haye of
Marshall University*

2012-2013 Scholarships and Fellowships**Graduate Fellows****West Virginia University**

Jennifer Davis
Matthew Rhudy
Brenton Wilburn

Marshall University

Miranda Carper
Johannes Fahrman
Mary Wolf

Undergraduate Fellows**West Virginia University**

Mohammad Afshari
Evan Graber
Mohamad Kassari
Jonathan Yancey

WV Wesleyan College

Russell Gillespie

Marshall University

James Collins
Erin Fankhanel
Courtney Hatten
Catherine Higgins
Patricia Mihm
Matthew Thompson

Scholarships**Bethany College**

Tanner Coles
Alexander DelGiorno
Samuel Duvall
Jacob Fischer
Brian Garrison
Joseph Greschner
Kyle Kelley

Brittany Marsh
Daniel McClelland
Olivia Pavlic
Cassandra Spalding

Bluefield State College

Samuel Dennah
Mardochee Isme
Sasha Richmond
Sherri Rutherford

Fairmont State University

Jade Bennett
Lauren Gates
Justin Hilliard
Lauren Siburt
Tiffany Woodson

Glennville State College

Carly Caldon
Robert DeWees
Adrian Patterson
Randy Smith
Dylan Tomblin
Judith Urbanic

Marshall University

Allison Acord
Matthew Blake
Hannah Brewer
Caleb Calvary
Arrin Carter
Mark Castle
Sumaiya Chaudhry
Ateeq Chaudhry
Shawn Cheeks

Robert Cooper
Roger Estep
Jared Galloway
Joshua Hamrick
Abigail Hayes
Alex King
Sarah Legg
Ashley Lyons
Christopher McNeese
Tabitha Norman
Jordan Paris
Meghan Pauley
Brandon Posey
Jacob Potter
Kristen Rose
Jessica Shiltz
Eric Slayton
Brian Warner
Clifford Workman
Emily Wright

Shepherd University

Lawrence Bass
Jordan Cannin
Jeffrey Carter
Zoe Charalambous
Courtney Crites
Darryl Johnson
John Kessler
Merika Khurana
Trey Knepper
Kristen Logsdon
Brittani Love
Randy McCright
Jessica Novak
Steve Sanderson
Gerren Simms

Michael Skaggs
Matthew Tark
Chad Vandsordal

West Liberty University

Spencer Bell
Sherry Borsos
Raquel Fagundo
Michael Lucero
Leanne Mazzella
Andrea Renshaw
Nicole Sadecky
Leah Starkey
Jenna Wright

Wheeling Jesuit University

Taylor Christman
Callie Clark
Cassandra Carihfield
Vera Filatova
Rebecca Haley
Jenna Klemkowsky
Andre Lamyathong
Minh Le
Matthew Logan
Erin Metzger
Sierra Moore
Zachary Phipps
Anthony Schnelle
Kayla Workman

WV State University

Hannah Cavender
Lori Dingess
Ashton Gauff

Stephan Heywood
Jessica Hoffman
Rishi Reddy
Stephan Workman II

West Virginia University

Caitlin Ahrens
Jessica Carr
Andrew Rice
Jonathan Turner
Matthew Behrmann
Joseph Bright
Benjamin Carrero
Aaron Deneau
Barrett Dietzius
Jessica Felde
Larry Goontz
Joseph Halley
Stephen Itschner
Areej Kuzmar
Joshua Morgan
Carol Nielsen
Paula Pacurari
Wesley Vassar

WV Wesleyan College

Ryder Bolin
Lauren Cronise
Andrew Cvetnick
Evan Gorman
Amy Hein
Alex Loar
Jason Neace
Cody OMeara
Matthew Phares
Amelia Riley
Paige Rutter

Shepherd University Students Present Research for NASA Day

ISSUED: 7 May 2012

MEDIA CONTACT: Valerie Owens

Shepherd University hosted NASA Day on April 11, 2012. Thirteen students received fellowships with the West Virginia Space Grant Undergraduate Fellowship Program and presented their research.

The 14 fellowship recipients include Matt Alt, computer engineering major from Baker; David Chelf, mathematics major from Inwood; Matt Griffith, computer engineering major from Boonsboro, Maryland; Tyler Kessler computer and information sciences major from Kearneysville; Brittani Love, chemistry major from Martinsburg; Matthew Mocniak, computer and Information sciences major from Morgantown; Michael Smith, computer engineering major from Kearneysville; Jessica Cain, biology major from Inwood; Rebecca Furby, chemistry major from Charles Town; Jordan Hunter, biology major from Gapmills; Samantha Katz, biology major from Sykesville, Maryland; Dustin Revell, biology major from Martinsburg; Kelsey Fry, secondary education major from Kearneysville; and Lesley Swisher, biology major from Capon Bridge.

Fellowships are made possible by the NASA West Virginia Space Grand Consortium and Shepherd's School of Natural Sciences and Mathematics. The grants, which range from \$400-1,300, are matched by the Dr. Suzanne Shipley and the Office of the President.

According to Reza Mirdamadi, associate professor of engineering and chair of the Department of Computer Science, Mathematics, and Engineering, 30 students applied for the award. Each year, 10-15 students are accepted into the program. Mirdamadi also serves as a Board member on the NASA West Virginia Space Grant Consortium. Students made their proposals in December 2011 to a committee of faculty members, including Dr. Jason Best, professor of astronomy and astrophysics; Dr. Seung-yun Kim, assis-

tant professor of computer and information sciences; Dr. Dan Dilella, professor of chemistry and chair of the Department of Chemistry; Dr. Nicholas Martin, associate professor of mathematics; Dr. Zhijun Wang, assistant professor of computer science; and Dr. David Wing, associate professor of biology.

Research topics included the dependence of langmuir monolayer compression modulus on molecular structure and compression speed, developing a communication protocol for a robot over a wireless local area network, and development of a simplified CPU instruction set architecture based on the Cyclone II FPGA.

Mirdamadi said that the program encourages research on the undergraduate level. Works are published in the Journal of Undergraduate Research, which is distributed throughout the School of Natural Sciences and Mathematics.

"NASA Day is designed to acknowledge and recognize our students who have shown their commitments in enhancing their educational experience at a unique and exceptional level. The NASA scholars have shown that dedication through their academic records and conducting research with faculty," said Mirdamadi.

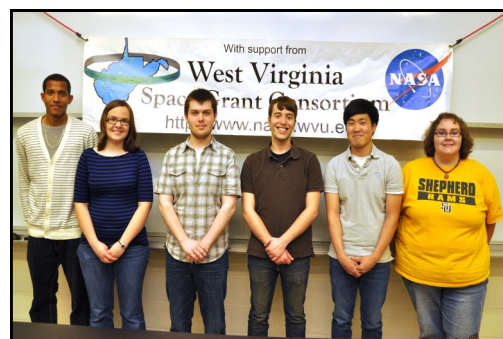
Scholarships were given to Steave Sanderson, computer engineering major from Shepherdstown; Michael Skaggs, computer engineering major from Arnoldsburg; computer engineering major from Arnoldsburg; Jeffrey Carter, computer engineering major from Shepherdstown; Matt Tark, computer engineering major from Hagerstown, Maryland; Courtney Crites, computer engineering major from Moorefield; Caitlyn Shane, computer information technology major from Hedgesville; Duncan Taylor, environmental studies major from Chester, Maryland; Allison Craver, chemistry major from Charles Town; Lawrence Bass, computer engineering major from Garland, Texas; Katherine Hoeck, mathematics major from Kearneysville; and

Trey Knepper, environmental studies major from Hedgesville.

Recipients of this year's Faculty Research Enhancement Awards were Best; Kim; Dr. Ralph Wojtowicz, assistant professor of mathematics; Dr. Jeff Groff, assistant professor of physics; Dr. Liao Weidong, associate professor of computer and information sciences; and Dr. Osman Guzide, associate professor of computer and information sciences.



Fellowship recipients pictured above are Matt Mocniak, David Chelf, Tyler Kessler, Dustin Revell, Lesley Swisher, Kelsey Fry, Michael Smith, Matt Alt, Matt Griffith, Brittani Love, Samantha Katz, Jessica Cain, and Jordan Hunter.



Scholarship Recipients pictured above are Lawrence Bass, Courtney Crites, Michael Skaggs, Jeff Carter, Matt Tark, and Caitlyn Shane.

2012 STaR Symposium and WVAS Meeting: A Success!

<http://www.wvresearch.org/>

The 4th biennial STaR Symposium and 87th annual meeting of the West Virginia Academy of Science April 20 and 21, 2012 at West Virginia State University may have been the ‘biggest gathering of scientists in West Virginia history!’ More than 350 college and university faculty members, researchers, graduate and undergraduate students, policymakers and members of the high-tech business community registered to attend .

The STaR Symposium/WVAS meeting featured two full days packed with opportunities to collaborate and learn about research, commercialization and more. The Symposium featured students, faculty and successful West Virginia researchers who have transformed ideas from the brain to the lab to production and to market, and many others.

Keynotes speaker were:

- W.Va. Higher Education Chancellor Dr. Paul Hill
- U.S. Senator Jay Rockefeller
- National Science Foundation Director Dr. Subra Suresh
- Solar system exploration engineer Gentry Lee of the NASA Jet Propulsion



At West Virginia State University, Senator Jay Rockefeller looks on while NSF Director Dr. Subra Suresh speaks from the panel.

Fourth Annual Aviation Summer Camp

The NASA West Virginia Space Grant Consortium, in cooperation with the Mid-Atlantic Aerospace Complex, will host the fifth annual Aviation Summer Camp, June 12-14, 2013, on the Evansdale campus of West Virginia University. The in-residence camp provides an opportunity for 50 students selected from across the state to have an aviation-focused experience.

The first day of camp features aerospace- and aviation-related activities; hands-on design challenges; lab tours at the Benjamin M. Statler College of Engineering and Mineral Resources and a presentation by the Spinning Bees, featuring world freestyle Frisbee champion Gary Auerbach. Day two will be held in Wheeling, where campers will participate in an onsite mission at the Challenger Learning Academy and on day three, they will travel to the Bridgeport Airport to take part in activities that include demonstrations and static displays, which allow participants to get an up-close experience with aircraft and local aerospace industries.

The camp concludes with a special presentation by former astronaut and WVU alumnus Captain Jon McBride. McBride’s presentation, which is open to the public, will be held on June 15 at 1:30 p.m., in the Blue and Gold room located in the Evansdale residential complex.

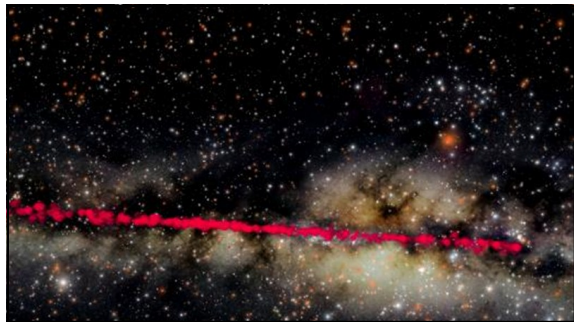


For more information please contact Candy Cordwell, Cordwell@nasa.wvu.edu

Pictured here is Luke Knollinger, of Bridge Street Middle School in Wheeling, an attendee of the 2012 Aviation Summer Camp.



2012 Aviation Camp participants with Captain Jon McBride.



Red areas mark locations of a string of newly-discovered HII regions stretching across a portion of the Milky Way. CREDIT: HRDS Survey Team, NRAO/AUI/NSF (radio); Axel Mellinger (optical)

Video of HII region locations strung across a portion of the Milky Way VIDEO CREDIT: Brian Kent, Bill Saxton, John Stoke,



Robert C. Byrd Green Bank Telescope (GBT) is the world's largest fully steerable radio telescope. It is part of the NRAO site at Green Bank, WV

Students Exploring the Universe with Radio Telescope



A new program is giving middle-school-aged youth the chance to take remote control of a large, research-grade radio telescope and expand their cosmic explorations beyond what the eye can see.

The National Radio Astronomy Observatory's (NRAO) 20-meter-diameter telescope in Green Bank, West Virginia, is joining a global network of telescopes bringing the excitement of hands-on research to young people via 4-H, the nation's largest youth development organization.

The National Radio Astronomy Observatory is a facility of the National Science Foundation, operated under cooperative agreement by Associated Universities, Inc.

Contact: Dave Finley, Public Information Officer Socorro, NM (575) 835-7302 dfinley@nrao.edu



The NRAO 20-Meter Telescope CREDIT: NRAO/AUI/NSF



Anne Nealon, a student at Broadway High School in Rockingham, Virginia, remotely operates the NRAO 20-meter telescope from her school library. CREDIT: Russ Kohrs, NRAO/AUI/NSF



8th Grade Career Day of Monongalia County

The annual “8th Grade Career Day of Monongalia County,” held every spring, encourages 8th grade students to start considering their career path as they prepare to graduate to High School. Almost 800 students from Monongalia County attended the event on April 19. Professionals from a variety of North-Central WV businesses prepare educational activities and instructional materials for students of Monongalia and surrounding counties. The Lunabotics team “Mountaineers” were invited to participate in this event, supporting the WVSGC. The team demonstrated a variety of robots to show students how the STEM fields can be employed in real-world applications. Students were engaged, asking how robots are built, how long it takes, and most importantly, what steps they needed to take as they progressed through their education to participate in robotic development projects.



A Lunabotics team member demonstrates the Mars Rover robot for the students.

Student Activities Sponsored by the West Virginia Space Grant Consortium



The 2012 Academy of Engineering Success; a summer program sponsored by WV SGC and held on the campus of West Virginia University.



Bluefield State College student, Sasha Richmond, learns to program a robot as part of the Lunabotics project



WV Wesleyan College student, Jacob Poldruhi, poses with his new best friend, Robonaut, at NASA Johnson Space Center while interning at 2012 NASA Space Academy at Glenn Research Center.



The WVU section of the Society of Women Engineers (SWE) attended the annual Societal Conference in Houston TX. The WVU section is a member of Region G.