



National Aeronautics and Space Administration

GODDARD

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Goddard Earth Scientist Receives Exceptional Space Act Award

by Cynthia O'Carroll, Office of Public Affairs

Dr. Norden Huang, of Goddard's Laboratory for Hydrospheric Processes has received a NASA Space Act Award in the exceptional category for his invention of the Hilbert-Huang Transformation Method, a unique spectral analysis method for analyzing nonlinear and nonstationary data and images. The award was presented at Goddard, and it included a cash amount of \$30,000.

The NASA Headquarters Inventions and Contributions Board recognized the new method of data analysis "as one of the most important discoveries in the field of applied mathematics in NASA history." This new method is expected to provide a more accurate result for nonlinear and nonstationary data than the Fourier method of spectral analysis.

"I discovered the Hilbert-Huang Transformation Method by chance, while performing research using conventional methods which are based on linear stationary assumptions," stated Huang. The world is not stationary, and many phenomena studied by scientists are the result of nonlinear processes."

Huang uses a formula in his method developed by the distinguished mathematician, David Hilbert, therefore, the method is designated the Hilbert-Huang Transformation Method.

"The simplicity and diversity of the Hilbert-Huang Transformation Method is amazing," stated Huang. The method can be applied in a variety of fields to study things such as: basic nonlinear mechanics, climate cycles, solar neutrinos variations, earthquake engineering,

geophysical exploration, submarine design, structural damage detection, satellite data analysis, nonlinear wave evolution, turbulence flow, blood pressure variations and heart arrhythmia.

NASA has filed three patents on the Hilbert-Huang Transformation Method. Numerous research organizations have been granted access to the method through the NASA Space Act.

Harvard Medical School is using the method to study changes in heartbeat as it relates to sleep apnea and epileptic seizures. The University of California at San Diego is using the new method to find a more accurate measure of 'normal' blood pressure. This same method can also be used to study vibrations related to the health and safety of structures, such as buildings and bridges.

A software package embodying the Hilbert-Huang Transformation Method is available for the Window NT environment. Requests for the software should be sent to Eileen.A.Lehmann.1@gsfc.nasa.gov

40th Anniversary Week

Community Day: May 2

Goddard will host a Community Day on May 2 to coincide with the other 40th Anniversary activities. The schedule of events include: a Living in Space presentation; Goddard Jeopardy; a children's activities tent; Puppets in Space presentation; Technology, Earth and Space science presentations; and tours of Goddard's various buildings.

May 3: Goddard's 40th Anniversary Symposium

Administrator Dan Goldin and members of the Maryland Delegation have been invited to speak to the Goddard community about not only our achievements, but also about the vision for Goddard's future. The afternoon session will feature Associate Administrators Dr. Ed Weiler and Dr. Ghassem Asrar and Goddard's Dr. John Mather and Dr. Jim Hansen.

All former Center Directors have been invited to the day's activities which will include a special reception hosted by the National Space Club at the Goddard Visitor Center that evening.

May 5: Goddard 40th Anniversary Picnic

The NASA Federal Credit Union will donate a 40-foot cake for all picnic attendees. Eurest Dining Service will offer selected items at special rolled back prices of the 1950's. The U.S. Army Drill Squad and Northwestern High School (Hyattsville, Md.) Marching Band will perform in the Goddard parade from the East to the West campus. Also offered will be a commemorative stamp collection booth staffed by the U.S. Postal Office and a table staffed by the Goddard Stamp Club. Check back next week for further details.

For more information on the events being planned for May 2-7, 1999 check the following website:

<http://pao.gsfc.nasa.gov/gsf/40th/40th.htm>



American Astronautical Society (AAS) President Wes Huntress presents Goddard Center Director Al Diaz with an award for delivering the 4th Goddard Memorial Lecture at the recent AAS Symposium. Diaz delivered a speech on the theme: "40 Years of Achievement at the Goddard Space Flight Center."

Another Goddard First

The Solar Maximum Mission, launched in 1980, was the first Sun-watching satellite equipped with a suite of instruments to concentrate on determining the nature of solar flares. The Solar Maximum Mission became the first spacecraft to be repaired in space.

Visit Goddard News on the web at <http://pao.gsfc.nasa.gov/gsf/gnews/gnews.htm>

Goddard To Host Washington D.C. Regional 1999 Botball Tournament

by Nancy Neal, Office of Public Affairs

Eleven area schools have joined forces with the Goddard to compete in the 1999 Botball Tournament, and on April 10, students from across the region will converge at Silverbrook High School, Silver Spring, Md. to compete in the Washington D.C. Regional Botball Tournament.

The program began with a three day tutorial session. During the session, teachers were given instructions for integrating the robotics material into the school math and science curriculum. The robot kits were handed out and mentors from Goddard were assigned. The robot kit consists of 1,300 Lego Technic pieces, a miniature computer, sensors and motors. Student teams will have six weeks to build their robots. The robots will be programmed by the students to operate autonomously without the use of remote controls. Students also will develop their Internet skills by creating websites where their answers to questions posed by the research design project will be posted.

The purpose of the game is for the robots to put the most ping pong balls into a targeted cup within a certain time limit. Two robots at a time will compete in the ready made Botball arena. The team with the most points will be declared the winner. Student team winners will go on to the national competition in Orlando, Fla. during the week of July 18-20.

The sponsored schools and Goddard mentors are: Springbrook High School in Silver Spring, Samir Chetti/935 is the mentor; Tilden Middle School in Rockville, Tricia Weir/740 is the mentor; Northwestern High School in Hyattsville, Dr. Jacqueline LeMoigne-Stewa/735 is the mentor; Southern High School in Baltimore, Dave Martin/730 is the mentor; Southwest Academic High School in Baltimore, Steve Kraft/581; Baltimore Polytechnic Institute, Ken Anderson/681 is the mentor; Sousa Middle School in Washington, D.C., Jeanine Shirley/423 is the mentor; Yorktown High School in Arlington, Va., Mary Reph/586 is the mentor; Wakefield High School in Arlington, John Downing/572; and Langston Hughes Middle School in Reston, Va., Nick Shur/544 is the mentor.

As an educational program, the tournament is designed to enhance students' skills in math, science, engineering, computer programming, physics, design and teamwork.

More information on the Botball tournament can be found at following website: www.kipr.org/botball

ISO 9001 Non-Conformance Reporting: What Needs To Be Reported

- Missed specifications/requirements after these have been put under configuration control (applies to the whole Center for all products under the scope of the Quality Management System)
- A discrepancy in receiving inspection
- A customer complaint about in scope products
- An event that results in harm, or could have resulted in harm, to a product
- An on-orbit anomaly
- A missed customer requirement
- A safety discrepancy

ISO 9001

Goddard's New Quality Policy

With customer satisfaction as our primary goal:

- GSFC is committed to meeting or exceeding our customer's requirements.

- We achieve excellence in all of our efforts.



Visit ISO at <http://arioch.gsfc.nasa.gov/iso9000/index.htm>

Quarterly Honor Award Recipients

The following Goddard employees and groups received Goddard Quarterly Honor Awards this month:

Outstanding Teamwork/Group

AM-1 Alternative Architecture AMOC/420
Landsat 7-DAAC Emergency System Development Team/430
NASA World Radio Conference – 97 Team/450
Naval Mobile Construction Battalions/451
Swift MIDEX Proposal Team/660
Kronos Proposal Team/740
UVSTAR Optical System Investigation, Redesign and Requalification Team/870G

Quality and Process Improvements/Teams

The OASIS Team/100
Human Resources Intranet Team/112
GPIRS Photo Database Team/253
STSci New Guide Start Systems Project Team/441
HST Advanced Camera for Surveys Filter Development Team/551
Parts Control Program Improvement Team/562

Customer Service Excellence/Individual and Group

Wanda L. Behnke/214
Teresa R. Spagnuolo/221
Raynor L. Taylor/421
William E. Cutlip/470
Maria M. So/730
Joanne R. Woytek/931
Intranet Team/130
Software Assurance Technology Center/300
SNOE Mission Team/470

Institutional Support Infrastructure/Individual and Group

Donna J. Swann/113
Tina Frizzell-Jenkins/224.2
Linda J. White/501
Kecia M. Ford/580
Power Lab Addition Project Team/224
Composite Building Blocks Team/543

Secretarial and Clerical Excellence

Susan E. Pierpoint/100
Desiree A. Taminnelli/201
Mellani Edwards/470
Kimberley A. Wilson/480
Dale L. Hithon/730
Joan F. Tarkington/740

Institutional Support Programmatic/Individual and Group

Marilynn J. Seppi/214
Stanley M. Wojnar/549
Kenneth W. Wagner/564
Elender J. Pouncy/740
HQ Grants Administration, Team/201
Guam Remote Ground Terminal Implementation Team/451.3

GODDARD NEWS Staff

Executive Editor: James Sahl
Managing Editor: Susan Hendrix
Contributing Editor: Nancy Neal
Senior Photographer: Mark DeBord
Submission deadline: Friday each week (submissions subject to editing)
For additional information contact:
Susan Hendrix 301•286•7745

Subscription Information:
GSFC & WFF Mailing List
Offsite/Commercial Subscriptions
Retiree Subscriptions

Contact:
Gweny Durrah, Code 239
Jim Sahl, Code 130
Bob Wilson 301•422•8334