

Astrophysics

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1 38th Mid-America Regional Astrophysics Conference

The conference was held April 11th and 12th in the auditorium at the Linda Hall Library in Kansas city MO. Below are a few of the papers that I took note of. The web site for this conference is

<http://www.physics.ku.edu/marac/marac.shtml>

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2 Invited Talk: Joanna Rankin.

Joanna Rankin is a well known radio astronomer from the University of Vermont. She works with the spherical Arecibo Radio telescope in Puerto Rico. The title of her talk was **Connecting Radio Pulsar Phenomena with Emission Physics** Pulsar radiation exhibits a number of fascinating phenomena, such as core/cone emission, subpulse drifting, nulling and mode changing. Exciting progress is being made in understanding where the radiation is emitted and how it is affected by propagation effects in the magnetosphere. Joanna played recordings of pulsars. Pulsars were discovered by Jocelyn Bell-Burnell in 1967 at Cambridge University. She was working under Anthony Hewish. Sir Martin Ryle and Antony Hewish won the Nobel prize in Physics in 1974, for their pioneering research in radio astrophysics: Ryle for his observations and inventions, in particular of the aperture synthesis technique, and Hewish for his decisive role in the discovery of pulsars. They were both from the University of Cambridge. Ryle is now at Princeton. They were both present at the conference. Pulsars are Neutron stars of incredible density and small size. They put out a radio beam. This beam sweeps around as the planet rotates at a rate from a few seconds to a few milliseconds. There was a forty year celebration of the discovery at McGill university in Montreal last August. McGill is an international university located in Montreal, Quebec. Ernest Rutherford was at McGill around the

time of his discovery of the atomic nucleus. All of the conference was web cast, and can be viewed on the Internet:

<http://www.ns2007.org>

This includes a public lecture by Jocyn Bell and a talk by Anthony Hewish. I talked to Joanna about the stability of the Arecibo telescope. She said several engineering awards had been won for the design and the antenna which is hung above the spherical antenna by an elaborate cable system with damping. Some people from the old MIT radiation laboratory had contributed several important ideas for the design.

3 Invited Talk: Tod Boroson of NOAO

Tod Boroson is the interim director of NOAO. The National Optical Astronomy Observatory was formed in 1982 to consolidate all AURA-managed ground-based astronomical observatories (Kitt Peak National Observatory, Cerro Tololo Inter-American Observatory, and the National Solar Observatory with facilities at Sacramento Peak, New Mexico and Kitt Peak, Arizona) under a single Director. Boroson talked about making the observatories open to astronomers for observation and about new capabilities. Community based committee. He attended the Copenhagen Play at crown center. I visited Kitt Peak once when I was in Tucson. I talked to him about Kitt Peak and the stormy relationship with the indians. Kit Peak is on an indian reservation, and is just below the telescopes is an area of the mountain where the indians believe God lives.

<http://www.gsmt.noao>, currents@noao.edu, www.noao.edu

4 Talk: Matthew Beaky and Adam Vogt, Visual Spec

Title **Spectroscopic Monitoring of Miara-Type and Semi-Regular Variable Stars**. I asked one of the speakers about spectroscopy identification and he pointed me to the free software known as VSPEC or Visual Spec.

Link: <http://www.astrosurf.com/vdesnoux/download.html>

5 Education

There were several talks on astronomy education. There were a couple of talks by people from the University of Nebraska on an online project for astronomy education: **The Nebraska Astronomy Applet Project**. <http://astro.unl.edu> NSF grant number 0231270.

6 ASEM Observatory

James Roe of the Astronomy Society of Eastern Missouri gave a talk on a new large telescope that this group is constructing near St Louis and how users can gain access to it.

7 Talk: John P Ralston, University of Kansas

Dark Energy and the Virgo Alignment Ralston has a somewhat controversial theory about dark energy. He also had several remarks and suggestions for many of the speakers.

8 Photo Story

James Caffey Missouri State University and Drury University uses Photo Story free from Microsoft for adding audio to slide shows and uses these to teach astronomy over the Internet. I downloaded this

9 Talk: Angela Speck

Angela Speck gave a talk called **The Origin of Crystalline Silicates: Clues from an O-Rich AGB Star** (AGB star: Asymptotic Giant Branch.) An AGB star consists of a degenerate C/O core surrounded by a very extended convective atmosphere from which mass is lost via a dense and dusty outflow at She is a quite interesting young astrophysicist. See her web site for pictures of her tattoos and the locations in London where she got them. She is at Missouri-Columbia, writes for the Columbia paper, does many projects

with students, and also teaches a geology course. Her husband or partner is also at UMC in the Geology Department. He is from Great Britain also. See the web page <http://web.Missouri.edu/speckan/>

10 Talk: Karen Camarda

Dynamic Bar-Mode Instability in Differentially Rotating Magnetized Neutron Stars Collapse of spheroidally shaped object can collapse for a time into a bar-shaped instability. Works with the Cosmic++ code at Lawrence Livermore. Not connected with weapons. Last years conference talked about a general relativity calculation. I asked what is her favorite General relativity book: **A First Course in General Relativity** Bernard Schutz. I told her that maybe I had that book, but it turns out that I have a book by Schutz on Geometry and Physics. She is at Washburn University, Washburn evidently has an observatory. GSFC code?

11 Invited Talk: Eric Linton Benedictine College

Astronomy with Cerenkov Telescopes This was an interesting talk by a guy who seems very knowledgeable. It looks like many serious researchers are forced to teach at small colleges, where presumably they teach low level astronomy classes. New generation of Cerenkov telescopes have revolutionized the field of TeV gamma-ray astronomy. long-standing mysteries may be solved, overview of atmospheric Cerenkov technique, can probe topics from cosmic rays to active galaxies.

12 James MacCullaugh

He was a contemporary of Stokes and there is a spectroscopy analysis or something connected with his name, but I have not been able to locate any biographical information.

13 Bibliography

[1] Meyers Robert A. , **Encyclopedia of Astronomy and Astrophysics**, Academic Press, 1989.