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did not specify any of the detailed conventions required to convey the complexities of actual image projections. Building on conventions in wide use within astronomy, this paper proposes changes to the simple methods for describing coordinates and proposes detailed conventions for describing most of the methods by which spherical coordinates may be projected onto a two-dimensional plane. Simple methods for converting from the existing coordinate conventions are described. This paper does not attempt to address the politically sensitive questions of frequency/velocity coordinates, nor does it address various other types of coordinates, such as time.

9.02

The Scientific Visualization Studio at the NASA/Goddard Space Flight Center

R.A. White, J.E. Strong, D.E. Pape, H.G. Mitchell (NASA/GSFC), A. McConnell (Pix/GSFC), J.M. Cavallo, R.L. Twiddy (HSTX/GSFC), H. Rais (MDSSC/GSFC)

The Scientific Visualization Studio is a part of the Scientific Applications and Visualization Branch of the Space Data and Computing Division at the NASA/Goddard Space Flight Center. It is tasked to provide advanced data visualization support to users of the NASA Center for the Computational Sciences and other NASA funded scientific researchers in both the space and Earth Sciences. Such support includes providing both software and expertise in visualizing large, complex, multidimensional data sets, and in creating videos, films, and other forms of hardcopy of the results. Hardware and software tools include a Cray Y/MP, a Convex C3240, a MasPar MP-1, a family of SGI workstations, video disks and recorders in all the international standards, color printers, photographic and movie transfer tools, and IDL, AVS, and FAST.

We demonstrate these capabilities, as applied to various Earth and space science data sets, through a variety of annotated images and a video.

Session 10: Teaching of Astronomy Display Session Pauley

10.01

Astronomy Day at a Science Museum

C. M. Brunello

On May 1st, 1993, the Don Harrington Discovery Center in Amarillo, Texas, and the Amarillo Astronomy Club celebrated Astronomy Day. Many activities were planned for children, and there was a variety of information on astronomy available for adults. A star party was planned for that evening, with a back-up date in the event of bad weather. Information on the event was sent out to the media one month in advance.

This paper will discuss the day's events--its shining successes and dismal failures--based on attendance, media response, and public evaluation. Visuals and descriptions of the day's activities will be presented, along with suggestions on how they could have been improved. Our main goal is to increase the public's interest in astronomy; an attempt will be made to evaluate how successful we were.

10.02

"The Active Sun": Educational Videotapes on Solar Physics for College Astronomy

N. Hurlburt, A. Title, T. Tarbell, Z. Frank, K. Topka and R. Shine (Lockheed Solar and Astrophysics Laboratory)

We present a series of short, educational documentaries on solar physics aimed at college-level general astronomy courses. These tapes highlight recent advances in high-resolution solar astronomy and in theoretical and computational modeling of solar physics with particular focus on dynamical phenomena. The relevant physical mechanisms, theoretical interpretations and observational techniques are discussed. These include granulation, the theory of convection, five-minute oscillations, sunspots, magnetic fields, seeing and dopplergrams. VHS tapes are available to researchers and educators through a variety of distributors.

This work supported by Lockheed Independent Research Funds.

10.03

A Period-Finding Tool

C.H. Sandberg Lacy (U Ark)

My first real research job in astronomy was finding the orbital periods of eclipsing binary stars. I worked for Balfour S. Whitney as an undergraduate research assistant at the University of Oklahoma Observatory in 1967. We used hand-drawn plots of eyeball estimates of the brightness of star images on astrograph plates and calculated orbital phases from trial estimates of the period by using a Merchant mechanical calculator to do the 10-digit arithmetic (Balfour wore out 3 of these calculators in his time). It was a slow and exacting process, and getting a good period took many hours of work. I did learn a lot about binary stars and real data in the process, however. The task of period-finding is still a good way to introduce students to binary-star astronomy. The processes of light curve calculation and display can be accomplished by a modern microcomputer so rapidly that many trial periods can be checked quickly, and a numerical measure of the quality of the trial period (the "scatter") allows quantitative selection of the best trial period. The tool I have developed has an interactive graphical user interface and is very easy to use -- I have developed a lab exercise that employs it in my introductory liberal-arts astronomy class -- yet it is powerful enough to be used for research as well. The program shows its greatest advantage in determining periods from unequally sampled data when the period is shorter than the average sampling interval. I will demonstrate the program on a Macintosh computer.

10.04

The UCSB Remote Access Astronomy Project: Image Processing for High School and Undergraduate Students

Jatila van der Veen (ACHS), Erin O'Connor (UCSB,SBCC), Ted Smith (UCSB), Chris Bosso (UCSB), Carlos Alexandre Wuensche (UCSB,CNPq(Brazil),INPE(Brazil)), Philip Lubin (UCSB,CfPA)

The Remote Access Astronomy Project (RAAP) at the University of California, Santa Barbara is a computerized image data base, remotely-operated telescope with CCD camera, and electronic mail system. Students and teachers can download high quality images and curricula for physics, astronomy, chemistry, and earth science courses, as well as exchange ideas and e-mail over the bulletin board. The telescope is now available on a limited basis for remote

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