ABSTRACTS OF PAPERS PRESENTED AT THE SPRING MEETING OF THE AAVSO IN QUEBEC CITY, CANADA MAY 21 - 23, 1983

AAVSO - OBSERVING AND DATA BANK

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Abstract

The American Association of Variable Star Observers (AAVSO) is an international scientific and educational organization of 1200 amateur and professional astronomers. The AAVSO has about 2000 variable stars of all types in its visual and photometric observing program. Through the voluntary efforts of its observers, 170,000 to 200,000 observations of variable stars are made annually. Since its founding, over 4,500,000 observations have been compiled. Observations received at Headquarters are entered in a computer and the data are made available to the astronomical community through individual requests from astronomers and through AAVSO publications. The AAVSO, together with its committees, plays an important role in the astronomical community through its long-term and current, machine-readable data on hundreds of stars, its simultaneous observations during observing runs with ground-based, large-aperture telescopes and satellites, and its alert system for the unusual activity of variable stars.

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O-C MAGIC

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Abstract

The period or periods of variable stars can reveal important information about their internal structure and the nature of their variation. Many methods exist for determining the period(s); however, most of these methods are heavily mathematical, and they often include assumptions about the nature of the variability which may not be justified. For example, most methods assume that the period(s) are not changing with time. A simple, graphical method which is often very effective in showing the presence of multiple periods or of changes in the variability is the O-C diagram. This diagram is simply constructed by plotting the observed (O) minus the calculated (C) time of maximum (or minimum or mean...) light, where a trial value of the period is used to obtain the calculated times of maximum light. Examples of O-C diagrams for interesting cases are shown, and how period changes and other phenomena generally affect the O-C are discussed.

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THE CHEMISTRY AND PHYSICS OF COMET HALLEY FRAGMENTS

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Abstract

Two meteor showers, the Eta Aquarids in May and the Orionids in October, contain fragmented material from Comet Halley. Various chemical and physical parameters for groups of meteors belonging to these two showers have been determined from the analysis of both direct photographs and spectrograms. These parameters include chemical compositions, bulk densities, fragmentation indices, and ablation coefficients. In round figures, the mass range of the meteoroids studied extends from 0.01 to 100 grams.

The chemical and physical characteristics of the Halley Comet meteoroids are compared with those from other meteor showers. The Giacobinid meteoroids are exceptional in their low density and high fragmentation index, while the Geminid meteoroids, in contrast, are of high density with a much lower tendency to fragment. The Halley Comet meteoroids are in between these two extremes, but are somewhat closer to the low-density, high-fragmentation particles.

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ANTONIA MAURY'S OVER-CORRECTED MASS-RATIO FOR BETA LYRAE

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Abstract

In the course of classifying stellar spectra photographed at Harvard College Observatory in the 1890's, Antonia Maury observed fascinating, complex changes in the spectrograms of Beta Lyrae. She monitored these changes in the 1920's, and published her analysis and interpretation of them in 1933. Because her solution for the mass-ratio differed greatly not only from other previously-published results but also from the prediction of Eddington's mass-luminosity relation, Otto Struve criticized it immediately. This paper investigates the erroneous assumption Miss Maury made in deriving her solution and the justification Struve had in questioning it.

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ANALYSIS OF PHOTOMETRIC DATA ON ASTEROIDS

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Abstract

Photoelectric photometry of an asteroid can be analysed to yield a great deal of information about it. First, using Fourier harmonic analysis, the rotation period can be derived. If the data span several days or weeks, the phase coefficient can be calculated, giving a measure of how rapidly the asteroid varies in magnitude during an opposition. After determining its absolute magnitude, a simple series of equations permits calculation of the asteroid's albedo and diameter. Data spanning several oppositions can be used to determine the asteroid's pole position. Observations are presented and computer programs are described which calculate all of the above parameters except the pole position.

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THE AMATEUR ASTRONOMER AND THE INTERNATIONAL HALLEY WATCH

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Abstract

The current apparition of Halley's comet has generated considerable interest in the astronomical community. This interest has been highlighted by the formation of the International Halley Watch (IHW), which coordinates ground-based observational activities. The IHW is divided into "Nets" corresponding to different observational disciplines. The focus of this paper is the Amateur Net.

The Amateur Net is headed by Steve Edberg of the Jet Propulsion Laboratory. Amateur contributions will include visual, photographic, and photoelectric observations of the comet. The amateur observations of the comet are important because the amateurs will be observing the comet using the same methods the professionals used in 1910.

In this paper, an overview of the Amateur Net is given. The organization and observational programs of the Amateur Net are presented.

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SLIDING TO THE STARS AT JARNAC OBSERVATORY

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Abstract

My first observing session within the walls of a sliding roof observatory was a real eye-opener. In an instant, I was protected from wind, from unwanted animals, and from having to run inside to look for star charts. I learned that an inexpensive, easily built sliding roof observatory could provide comfort and convenience, resulting in observations of increased accuracy and quality.

This paper considers the observatory buildings that now await the sunset at Jarnac Observatory. It traces the procedure by which I designed and built the main station, and it encourages other amateurs to avoid some of the construction errors I made.

Finally, this paper explores the benefits a small observatory building offers in variable star observing and in other disciplines.

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