Such data set is highly valuable, not only by its size but, as well, since it brings together observations made in both the hemispheres, covering a large range of zenith distances, from 30° to 70°. Besides, 18 orbital revolutions were followed with nearly uniform distribution.

The analysis of the individual campaigns, in each zenith distance (z) and site, enabled the establishing of a scale of weights, depending uniquely on z. Weight 1 for $z<45°$, weight 0.5 for $45° \leq z < 56°$ and weight 0.25 for $56° \leq z$. The global solution includes as unknowns the correction to the FK5 equator (ΔA), to the equinox (ΔE), to the obliquity of the ecliptic ($\Delta\varepsilon$), to the Sun's mean longitude (ΔL), to the orbit's eccentricity (Δe) and to the longitude of the perihelion ($\Delta\varpi$), plus a correction to the instrumental zenith distance, in each individual campaign.

The result presents standard deviation of 0″63 for a double transit (lower and upper limbs) of unit weight. The main unknowns presented the following results: $\Delta A = -0''01 \pm 0''04$, $\Delta E = 0''09 \pm 0''06$, $\Delta\varepsilon = 0''49 \pm 0''05$, $\Delta L = 0''03 \pm 0''05$, $\Delta e = 0''10 \pm 0''01$ and $e\Delta\varpi = 0''01 \pm 0''01$. Only the corrections to the eccentricity and to the obliquity resulted significantly different from zero.

AUTOMATIC NEOs DETECTION USING THE HOUGH TRANSFORM

Marcelo Ruétalo[1] and Gonzalo Tancredi[1]

The importance of software based detections of NEOs in automatic searches stresses the need for more accurate and powerful detection algorithms.

In the present work, we present an alternative method for automatic trail detection on digital images based on the implementation of the Hough transform, a technique often used in computer vision tasks. Our algorithm makes use of variable resolution Hough transformations together with edge detection techniques and flux value restrictions in order to improve the detection capabilities, specially for low signal to noise ratios.

We present both results of applying the algorithm to some CCD images containing trails and statistical results obtained by using star fields containing simulated trails of different length and signal to noise ratios.

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ON THE PLANETARY ORIGIN OF METEORS DETECTED IN METEOR-BURST RADIO LINKS

N.J. Schuch[1], C. Denardini[1], E. Lüdke[1], and C.B. Carvalho[2]

This paper reports very preliminary results of an extensive investigation on the origin of meteors seen in meteor-burst radio links. Radio echoes from a low-frequency link between Santa Maria/RS and São José dos Campos/SP have been obtained from 1991 to 1994 and we have detected variety of pulse profiles corresponding to enhaced scattering cross-sections due to dense and superdense ionospheric ionization by meteor trails.

A systematic investigation on the frequency and intensity of such bursts is reported and we discuss whether there is a preferential arriving direction for low-mass meteors within the solar system or not.

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CHAOTIC DYNAMICS OF PLANET-ENCOUNTERING BODIES

Gonzalo Tancredi[1] and Verónica Motta[1]

The dynamics of two families of minor inner solar system bodies that suffer frequent close encounters with the planets is analyzed. The families are: Jupiter family comets (JF comets) and Near Earth Asteroids (NEAs).

The motion of these objects is known to be chaotic in a short time scale, and the close encounters are supposed to be the cause of the fast chaos. For a better understanding of the chaotic behavior we compute Lyapunov Characteristic Exponents (LCEs) for all the observed members of both populations. LCEs are a quantitative measure of the exponential divergence of initially close orbits. We observe that most members of the two families show a concentration of Lyapunov times (inverse of LCE) around 50–100 yr. The concentration is more pronounced for JF comets than for NEAs. Among the NEAs, a lesser spread is observed among those that actually cross the orbit of the Earth (mean perihelion distance $q <$ 1.05 AU). A general correspondence between Lyapunov times and the

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