All the data has been reduced using IRAF (DAOPHOT) and calibrated using standard methods with bias and dome flat-field images as well as standard stars from Landolt. The analysis of these results point out a decrease in (2060) Chiron's brightness from its peak values of 1988–1991 (Lazzaro et al. 1995, BBAS, 27, 1125). The absolute magnitude, H_V, varies from a maximum of 6.5 in February/94 up to a minimum of 6.8 in June/95.

The exact value of absolute magnitude, however, is highly dependent on the adopted value of the slope parameter G. Since the value generally adopted of 0.70 was determined by Bus et al. (1989, Icarus, 77, 223) using a very short span of phase angle, a new determination of this parameter was performed giving a value of 0.71 ± 0.015. Due to the present low activity of (2060) Chiron we conclude that a value of G around 0.70 – 0.71 probably best represents its nuclear surface. The analysis of the slope parameter G also suggest that the $H - G$ magnitude system generally adopted to present (2060) Chiron brightness, may not be the most appropriate due to its cometary activity.

COMETARY NUCLEI CLOSE TO THEIR APHELIA

Javier Licandro[1], Gonzalo Tancredi[1], Mats Lindgren[2], Hans Rickman[2], and Ricardo Gil-Hutton[3]

Cometary nuclei seem to be remnant planetesimals of the formation of the outer Solar System. In spite of possible thermochemical modifications, these nuclei have apparently conserved a composition with abundant icy component where volatile species remain. Thus, it is obvious that they represent potentially outstanding probes of Solar System cosmogony, but to make full use of them, progress is needed in the study of their microscopic and macroscopic properties. Our program aims to reveal several of these properties for a number of comets by an accurate photometry of their nuclei. Assuming the albedos in a range of the already measured ones, the nuclear magnitudes yield estimates of the radii.

Since 1990, we have observed about 15 comets using different telescopes (e.g., 1.54-m Danish at La Silla, 2.5-m Nordic Optical Telescope, 2.15-m at CASLEO, 2.0-m at Pic du Midi). We did CCD broadband photometry (V and R bands) of Jupiter Family comets at large heliocentric distances, to avoid as much coma contamination as possible.

We present here the results obtained with the Danish 1.54-m telescope at La Silla in three different runs. Nine comets were detected but many more were unsuccessfully looked for, which may be due to ephemeris uncertantities or because they were fainter than our detection limit. The observed V magnitudes are in the range of 18.7 to 23.0, while the corresponding absolutes V magnitudes are between 14.0 and 17.8. Assuming a geometric albedo of 0.04, we deduce nuclear radius in the range of 5.3 to 0.9 km.

The coma contribution can be detected by comparing the cometary image profile with stellar profiles. A cometary profile broader than stellar ones implies the presence of a coma. Four distant comets show clear signatures of activity, in particular two of them were very active: P/Hartley 2 at $r = 4.73$ AU and P/Smirnova-Chernykh at $r = 4.57$ AU. This activity is also discussed.

[1]Depto. de Astronomía, Facultad de Ciencias, Montevideo, Uruguay

[2]Astronomiska Observatoriet, Uppsala, Sweden

[3]Observatorio Astronómico Félix Aguilar, and Yale Southern Observatory, San Juan, Argentina

DYNAMICAL BEHAVIOR OF ASTEROID ORBITS NEAR A RESONANCE

Francisco López García[1]

We analized the dynamical behavior of real and fictitious asteroid orbits near a commensurability with Jupiter. We studied the dynamical system Sun-Jupiter-asteroids and the perturbations of Mars, Saturn, and Uranus to obtain the maximum Lyapunov exponent (γ). The motion of minor planets was considered in collective and single form. To calculate the Lyapunov exponent we used a time length of 10^6 Jovian periods. The behavior of γ is associated with the type of asteroid motion system considered. On the other hand, we also integrated numerically the motion's equations to determinate the variations of the orbital elements in term of time. We describe the type of asteroids motion as a function of the γ variation. The numerical simulations were undertaken using sympletic integrators. The 2:1 and 3:2 resonances for real and fictitious asteroids were studied.

[1]Observatorio Astronómico "Félix Aguilar", Universidad Nacional de San Juan, Argentina