Abstract P-5-1

JETS AND ARCS IN THE COMA OF COMET HALE-BOPP FROM AUGUST 1996 TO OCTOBER 1997

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An observation program for measuring the activity of comet Hale-Bopp was conducted at the Observatoire de Haute-Provence (OHP) from August 1996 to April 1997 and at ESO in October 1997. Narrow band images were obtained at the OHP 120 cm telescope with a 1024x1024 thinned CCD and the ESO 90 cm Dutch telescope. A set of four filters at 513, 516, 527 and 682 nm was used to measure the C_2 emission in the wavelengths corresponding to the (1,1) and (0,0) bandheads (i.e. 513 and 516 nm) and the intensity of dust-scattered continuum. Long slit spectroscopy was also performed at the OHP 193 cm and the ESO 152 cm telescopes. Images of the distribution of excited C_2 in the coma are obtained in computing the I(513 nm)/I(516 nm) ratio. They are compared with images of the red color of dust given by the I(682 nm)/I(527 nm) ratio.

The images obtained in August, September and October 1996, when processed with a Laplacian filter, show the presence of 5 to 6 jets on the sunward side and 3 jets on the anti-sunward side. In March and April 1997, series of arc, roughly concentric, were observed in the sunward hemisphere of the coma. The ratio I(513 nm)/I(516 nm) of the C_2 emission is an excellent parameter for measuring the degree of excitation of the C_2 molecule. This ratio is calculated in using the long slit spectra and the narrow-band images. The presence of arcs is detected in the spatial distribution of dust-scattered intensity, the I(682 nm)/I(527 nm) red color ratio and the I(513 nm)/I(516 nm) C_2 emission ratio. Their presence show that in modeling the distribution of gas in the coma, the local production of gas, probably resulting of dust fragmentation, should be taken into account.

Abstract P-5-2

QUANTITATIVE MORPHOLOGY OF COMET C/1995 O1 (HALE–BOPP) IN FEBRUARY–APRIL 1997

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Extensive CCD direct–imaging of comet C/1995 O1 (Hale–Bopp) has been carried out with the $1.06\,m$ telescope at the Hoher List Observatory and with the $0.70\,m$ telescope at the Potsdam Astrophysical Observatory.

The Hoher List data archives cover the following nights in 1997: February 20., 23., 28; March 31.; April 1.–7. We used a Ford Loral FA2048 chip with dual channel readout at $-100°C$ and the standard Johnson BVR filter set. The CCD–image scale of $0.83''px^{-1}$ corresponds to $850 - 1000\,km\,px^{-1}$ at the distance of the comet.

The Potsdam data archives cover the following nights in 1997: March 5.–10., 29., 31.; April 1., 2., 4., 12., 14., 15., 17., 20., 21. We used a Tektronix TK1024 chip with single channel readout at $-100°C$ and the standard Johnson–Cousins UBVRI filter set. The CCD–image scale of $0.50''px^{-1}$ corresponds to $525 - 590\,km\,px^{-1}$ at the distance of the comet.

Data reduction was done by standard MIDAS/IRAF-packages using sky and/or dome flat–fields.

In order to quantify the various features in the apparent morphology of the inner coma we introduce a new tomographic method that minimizes the bias due to image processing. The results are compared to applications of the addaptive Laplace filtering method.

Abstract P-5-3

IMAGING OF COMET HALE-BOPP AT ABASTUMANI

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Multiband images (10x14 sq.arcmin, 2.3x2.7 arcsec/pix) of Comet Hale-Bopp were obtained at Abastumani Observatory with CCD ST-6 attached to the Newtonian focus of the 70-cm meniscus telescope (f/3). The observations have been carried out on 03/30/1997 (12 frames) and 04/14/1997 (12 frames). The frames were processed using the MIDAS package with AIP contribution. Adaptive Laplace and Gragient filtering were applied to study the cometary dust coma structure which is an important source relevant to the study of cometary nucleus and the properties of the dust itself.

A few principal features were revealed, among them, an elliptical halo (b-a/b=0.33, r(max)=2 arcmin) which is approximately centered on the point of the maximum intensity (PMI) and is one of the main features of Comet Hale-Bopp along with a clearly visible (filtered images), at least, four nice arcs located at 10, 13, 17 and 21 arcsec from PMI. Moment analysis of the near nuclear region has also been done.

Abstract P-5-4

STRUCTURE OF THE DUST AND PLASMA TAILS OF COMET HALE-BOPP (C/1995 O1)

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On the basis of photographic observations of comet Hale-Bopp obtained in the Astronomical Observatory of Kharkiv state university during March-April, 1997 peculiarities and temporal evolution of some features of the dust and plasma tails of the comet are investigated. Some results of processing of photographic observations with the aim of study of large-scale phenomena in the cometary tails are discussed.