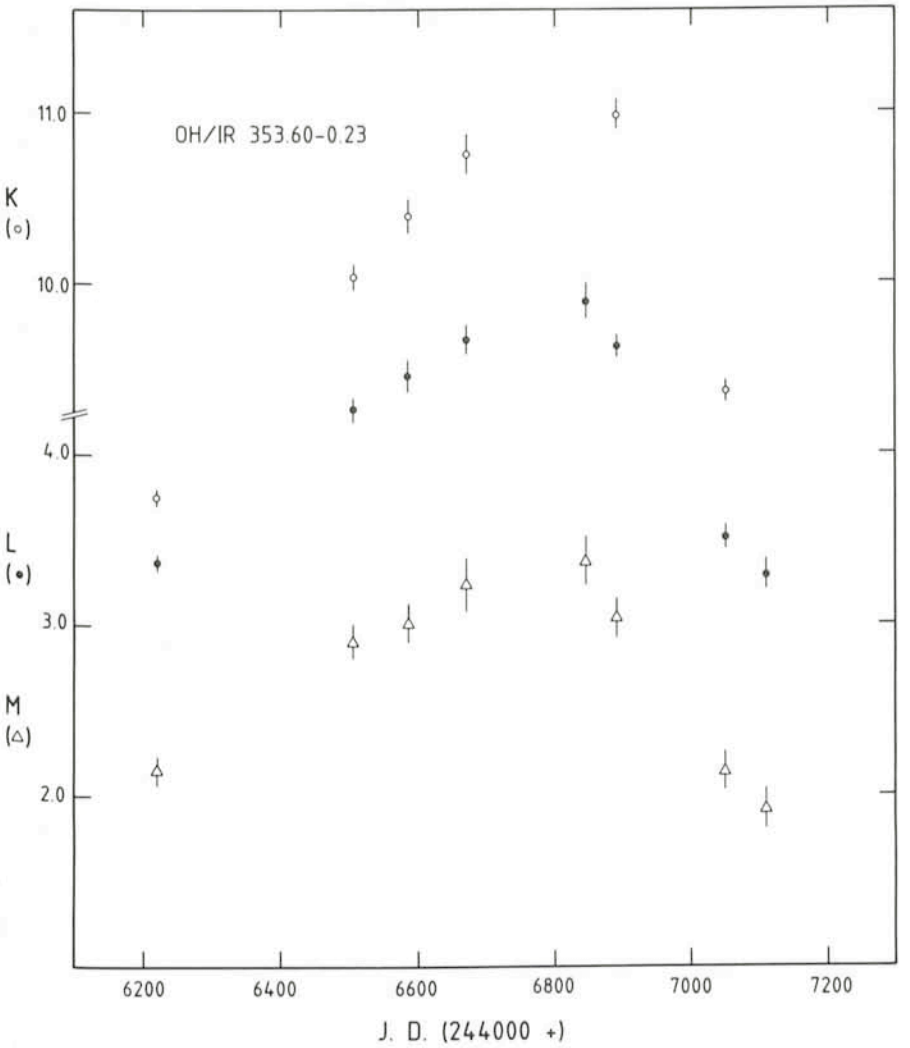

Figure 2: *K, L and M lightcurves of OH/IR 353.60–0.23.*

around 10^5 L$_\odot$, and its mass loss rate, ~ 1.5 10^{-5} M$_\odot$.yr^{-1} (3). The case of OH/IR 285.05+0.07 is less straightforward. If periodic, its period (defined as the lapse of time between successive extrema of the same type) should be larger than 1,000 days. In fact, comparison of data acquired in this programme with earlier data (e.g. around JD 2445200) shows that the lightcurve presents irregularities. Also, one notes a strong asymmetry in the lightcurve. It exhibits a linear variation for ~ 500 days followed by a plateau lasting at least 250 days. Then, the object passed from minimum to maximum in less than 150 days. Quite surprisingly, the lapses of time corresponding to the linear part and to the plateau are wavelength dependent.

OH/IR 353.60-0.23 is another programme object. The infrared counterpart of the OH maser was also discovered at the ESO 1-m (4). Its energy distribution peaks at 10 μm (5) and is similar to that of the prototypical object, OH/IR 26.5+0.6. This kind of source is very red (K-L ~ 6); in general, they cannot be measured at wavelengths shorter than 2 μm with the 1-m telescope. The K, L and M lightcurves are displayed in Figure 2. As for OH/IR 285.05+0.07, the period is at least 1,000 days. The observed lightcurves consist of two branches in which magnitudes are varying linearly with time. The declining branches last at least 500 days and the rising ones at least 300 days; at minimum, there is no evidence for a plateau of more than 100 days. This broken line lightcurve shape, without plateau, is similar to that of OH/IR 26.5+0.6 (see Figure 5 in 1); however, the latter's lightcurve shape is symmetric, which is not the case for OH/IR 353.60-0.23. Finally, from the available data there is no evidence that the shape of the lightcurve might change with wavelength. On JD ~2446200, i.e. near maximum, an H magnitude of 14.2 ± .2 was measured at the 1-m; obviously, to study the J and H lightcurves would require a more powerful system.

As dust shells are heated by central stars, variations observed in the IR reflect, among other effects, changes in total output luminosity of the central stars. From minimum to maximum (in 150 days or less), the central source of OH/IR 285.05+0.07 is varying from 4 10^4 to 6 10^4 L$_\odot$, the one of OH/IR 286.50+0.06 from 6 10^4 to 15 10^4 L$_\odot$ (in 250 days) and, finally, that of OH/IR 353.60-0.23 from 5 10^4 to 25 10^4 L$_\odot$ (in 300 days). Such intense variations in stellar objects are surpassed only by those of novae or supernovae.

It is generally assumed that OH/IR source lightcurves are quasi-sinusoidal (1); this assumption has never been checked. Although the sample of objects that we monitor is small, it seems that strongly non-sinusoidal lightcurves are, in fact, common. Also, in some cases (e.g. OH/IR 285.05+0.07), the shapes are wavelength dependent. Clear correlations between lightcurve shapes and presence of OH (6) or H_2O (7) maser emission have been found in Mira stars; it is believed that they indicate a relation, between the pulsational properties of central stars and the physical properties of circumstellar matter, originating in the mass-loss phenomenon. Such correlations have not been established in the case of OH/IR stars for lack of data. In fact, as some lightcurve shapes are wavelength dependent, the story might be more complex; however, observations of such wavelength dependency (like observations of time variability) would be useful in providing supplementary constraints on stellar and circumstellar models.

The success of this work would not be conceivable without the efficient and friendly support of all the La Silla infrared staff. Also, I am grateful to the numerous visiting astronomers who are spending, sometimes, a large amount of their precious time in discussions with their support astronomer, and, thus, are making of La Silla a place of scientific exchange.

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Visiting Astronomers

(April 1–October 1, 1988)

Observing time has now been allocated for Period 41 (April 1–October 1, 1988). The demand for telescope time was again much greater than the time actually available.

The following list gives the names of the visiting astronomers, by telescope and in chronological order. The complete list, with dates, equipment and programme titles, is available from ESO-Garching.

3.6-m Telescope

April: Moorwood/Oliva, Danziger/Moorwood/Oliva, Dennefeld/Bottinelli/Gouguenheim/Martin, Reimers/Koester/Schröder, Rhee/Katgert, Cristiani/Guzzo/Shaver/Iovino, Danziger/Guzzo, Cristiani, Chalabaev/Perrier/Mariotti, Mathys/Stenflo, Moneti/D'Odorico.

May: Tapia/Moorwood/Moneti, Tapia/Persi/Ferrari-Toniolo/Roth, Miller/Mitchell, Keel, Meylan/Shaver/Djorgovski, Ilovaisky/Chevalier/Pedersen, Swings/Courvoisier/Magain/Rémy/Surdej, Husfeld/Heber/Butler/Werner, Wagner.

June: Maggazù/Strazzulla, Le Bertre/Epchtein/Perrier, Krabbe/Zinnecker/Hofmann, Buonanno/Drukier/Fahlmann/Richer/Vanden Berg/Fusi Pecci, Fort/Mathez/Mellier/Soucail/Cailloux, Herman/Smith, Chalabaev/Perrier/Mariotti, Le Bertre/Epchtein/Perrier, Richichi/Lisi/Salinari.

July: Seitter, Simon/Haefner/Kiesewetter/Ritter, Véron/Hawkins, Fosbury/Tadhunter/Quinn, Rigaut/Merkle/Kern/Léna, Brahic/Sicardy/Roques/Barucci, van der Veen/Habing, van der Veen/Habing/Geballe, Brahic/Sicardy/Roques/Barucci.

August: Brahic/Sicardy/Roques/Barucci, Waelkens/Lamers/Waters/Le Bertre/Bouchet, Chalabaev/Perrier/Mariotti, Guzzo/Collins/Heydon-Dumbleton, de Lapparent/Mazure, Bergeron/Boissé/Yee, Balkowski/Batuski/Olowin, Maurogordato/Proust.

September: Guzzo/Tarenghi, Jarvis/Martinet, Danziger/Gilmozzi, Macchetto/Turnshek/Sparks, Heydari-Malayeri, Webb/Carswell/Shaver, van Groningen, Wampler.

2.2-m Telescope

April: Prusti/Wesselius, Persi/Ferrari-Toniolo/Busso/Origlia/Scaltriti, Giraud, Rosa/Richter, Rosa/Richter, Reinsch/Pakull/Festou/Beuermann, Reimers/Koester/Schröder, Reinsch/Pakull/Festou/Beuermann, Nota/Paresce/Burrows/Viotti/Lamers, Bässgen M./Bässgen G./Grewing/Cerrato/Bianchi, Rosa/Richter, Cristiani/Gouiffes, Rosa/Richter, Reinsch/Pakull/Festou/Beuermann.

May: Reinsch/Pakull/Festou/Beuermann, Piotto/Ortolani, Miley/Chambers, Rosa/Richter, Swings/Courvoisier/Kellermann/Kühr/Magain/Rémy/Surdej/Refsdal, Rosa/Richter, Reinsch/Pakull/Festou/Beuermann, Courvoisier/Melnick/Mathys/Binette/Maeder, Reipurth/Olberg/Booth, Reipurth/Zinnecker, Reipurth/Lada/Bally.

June: Metz/Haefner/Roth/Kunze, Le Bertre/Epchtein/Perrier, Schwarz.

July: Bertola/Zeilinger, Pizzichini/Pedersen/Poulsen/Belardi/Palazzi, Melnick/Skillman/Terlevich, Ulrich, Tadhunter/Pollacco/Hill, Gottwald/White/Parmar, Melnick/Skillman/Terlevich, Joly, Habing/Le Poole/Schwarz/van der Veen.

August: Tanzi/Falomo/Treves/Bouchet, Aurière/Koch-Miramond/Cordoni, Rampazzo/Sulentic, Tadhunter/Fosbury/di Serego Alighieri, Brocato/Melnick, Capaccioli/Ortolani/Piotto, Cristiani/Gouiffes.

September: Lortet/Lindgren/Testor, Burrows/Paresce, Durret/Bergeron, Christensen/Sommer-Larsen/Hawkins, Moeller/Rasmussen.

1.5-m Spectrographic Telescope

April: Faraggiana/Gerbaldi/Boehm, Doazan/Semak/Bourdonneau, Danziger/Fosbury/Lucy/Wampler/Schwarz, Courvoisier/Bouchet, Bues/Rupprecht/Strecker, Durret/Boisson, Danziger/Fosbury/Lucy/Wampler/Schwarz, Acker/Jasniewicz/Duquennoy, Eriksson/Gustafsson/Olofsson, Danziger/Fosbury/Lucy/Wampler/Schwarz, Spite F./Spite M.

May: North/Lanz, Danziger/Fosbury/Lucy/Wampler/Schwarz, Waelkens/Lamers/Waters, Spinoglio/Malkan, Danziger/Fosbury/Lucy/Wampler/Schwarz, Heber/Hunger/Werner, Danziger/Fosbury/Lucy/Wampler/Schwarz, de Jager/Nieuwenhuijzen, Mekkaden/Geyer, Lodén LO/Sundman.

June: Kameswara Rao/Nandy/Houziaux L., Kameswara Rao/Nandy/Houziaux L., Gahm/Bouvier/Liseau, Pottasch/Pecker/Sahu, Metz/Haefner/Roth/Kunze, Courvoisier/Bouchet.

July: Major overhaul – TRS.

August: Tanzi/Falomo/Treves/Bouchet, Danziger/Fosbury/Lucy/Wampler/Schwarz, Acker/Stenholm/Lundström, Kollatschny/Dietrich, Danziger/Fosbury/Lucy/Wampler/Schwarz, Jugaku/Takada-Hidai/Holweger, Hauck/Berthet/Lanz.

September: Danziger/Fosbury/Lucy/Wampler/Schwarz, Johansson/Bergvall, Vettolani/Chincarini, Danziger/Fosbury/Lucy/Wampler/Schwarz, Balkowski/Proust/Maurogordato, Rhee/Katgert, Danziger/Fosbury/Lucy/Wampler/Schwarz, Gerbaldi/Faraggiana, Khan/Duerbeck.

1.4-m CAT

April: Molaro/D'Odorico/Vladilo, Vladilo/Molaro, Gratton/Gustafsson/Eriksson, Butcher, Artru/Didelon/Lanz, Solanki/Mathys.

May: Spite E./Spite M., Lemmer/Dachs, Waelkens, de Jager/Nieuwenhuijzen, Wilson/Appenzeller/Stahl/Henkel, Vidal-Madjar/Ferlet/Gry/Lallement, Ferlet/Vidal-Madjar/Gry/Lallement.

June: da Silva/de la Reza, Mandolesi/Crane/Palazzi, Palazzi/Blades/Crane, Crane/Palazzi/Mandolesi, Danks/Crane, Pottasch/Sahu, Benvenuti/Porceddu, Magain/Lindgren.

July: de Vries/van Dishoeck/Habing, Schwarz/Bode/Duerbeck/Meaburn/Seitter/Taylor, Crowe/Gillet.

August: Gustafsson/Edvardsson/Magain/Nissen, Waelkens/Lamers/Waters/Le Bertre/Bouchet, Magain/Lindgren, Didelon, François, Lanz.

September: Foing/Jankov/Char/Houdebine/Butler/Rodonò/Catalano S., Foing/Crivellari/Vladilo, Castelli/Beckman/Char/Jankov.

1-m Photometric Telescope

April: Courvoisier/Bouchet, Santos Friaca/Le Bertre, Le Bertre/Epchtein/Perrier, van der Hucht/Thé/Williams, Bues/Rupprecht/Strecker, Gouiffes/Cristiani, Reinsch/Pakull/Festou/Beuermann, Reipurth/Olberg/Booth, Eriksson/Gustafsson/Olofsson, Schultz, Reinsch/Pakull/Festou/Beuermann.

May: Reipurth/Zinnecker, Reipurth/Lada/Bally, Le Bertre/Epchtein/Perrier, Tapia/Persi/Ferrari-Toniolo/Roth, Spaenhauer/Labhardt, Reinsch/Pakull/Festou/Beuermann, Le Bertre/Epchtein/Perrier, Courvoisier/Bouchet, Spinoglio/Malkan, de Jager/Nieuwenhuijzen, Lorenzetti/Berrilli, Saraceno/Berrilli/Ceccarelli/Liseau/Lorenzetti, Hesselbjerg Christensen.

June: Hesselbjerg Christensen, Gouiffes/Cristiani, Gahm/Bouvier/Liseau, Antonello/Conconi/Mantegazza/Poretti, Reinsch/Pakull/Festou/Beuermann, Antonello/Conconi/Mantegazza/Poretti, Le Bertre/Epchtein/Perrier, Richichi/Lisi/Salinari, Reipurth/Lada/Bally, Courvoisier/Bouchet.

July: Reinsch/Pakull/Festou/Beuermann, Duerbeck, Barwig/Ritter/Haefner/Schoembs/Mantel, Simon/Haefner/Kiesewetter/Ritter, Brahic/Sicardy/Roques/Barucci, de Muizon/d'Hendecourt, Brahic/Sicardy/Roques/Barucci, Courvoisier/Bouchet.

August: Brahic/Sicardy/Roques/Barucci, Di Martino/Zappalà/Cellino/Farinella, Bouchet/Cetty-Véron/Véron, Johansson/Bergvall.

September: Lortet/Testor, Gouiffes/Cristiani, Liller/Alcaíno.

50-cm ESO Photometric Telescope

April: Group for Long Term Photometry of Variables, Kohoutek, Morell/Gustafsson, Kohoutek, Lemmer/Dachs.

May: Carrasco/Loyola, Mekkaden/Geyer, Lodén LO/Sundman.

June: Sinachopoulos, Metz/Haefner/Roth/Kunze.

July: Carrasco/Loyola, Beißer/Vanysek/Böhnhardt/Grün/Drechsel.

August: Group for Long Term Photometry of Variables.

September: Carrasco/Loyola, Foing/Jankov/Char/Houdebine/Butler/Rodonò/Catalano S., Foing/Crivellari/Vladilo/Castelli/Beckman/Char/Jankov.

GPO 40-cm Astrograph

April: Scardia.
May: Landgraf.
August: Aurière/Koch-Miramond/Cordoni.
September: Debehogne/Machado/Caldeira/Vieira/Netto/Zappalà/de Sanctis/Lagerkvist/Mourao/Protitch-Benishek/Javanshir/Wosczcyk.

1.5-m Danish Telescope

April: Ardeberg/Lindgren/Lundström, Le Bertre/Epchtein/Perrier.

May: van Paradijs/van der Klis, Leibundgut/Tammann, West, Brocato/Buonanno/Castellani/di Giorgio, Ilovaisky/Chevalier/Pedersen.

June: Haefner/Ritter/Reimers.

July: Reinsch/Pakull/Festou/Beuermann, Cristiani/Gouiffes, Piotto/King, Gottwald/White/Parmar, Azzopardi/Lequeux/Rebeirot, Beißer/Vanysek/Böhnhardt/Grün/Drechsel.

August: Ardeberg/Lindgren/Lundström, Lortet/Lindgren/Testor, Grenon/Mayor.

September: Joergensen/Hansen/Noergaard-Nielsen, Johansson/Bergvall, Gregorini/Messina/Vettolani, Fusi Pecci/Buonanno/Ortolani/Renzini/Ferraro.

50-cm Danish Telescope

May: Franco.
June: Grenon/Bopp, Ardeberg/Lindgren/Lundström, Group for Long Term Photometry of Variables.
September: Ardeberg/Lindgren/Lundström.

90-cm Dutch Telescope

June: Grenon/Lub.
July: v. Amerongen/v. Paradijs.
August: Schneider/Weiss.

SEST

May: Reipurth/Lada/Bally, Israel/de Graauw, Crane/Kutner, Lequeux/Boulanger/Cohen, Israel/Baas, Israel/Baas/de Graauw/Douglas, Heydari-Malayeri/Encrenaz P./Pagani, Garay/Rodriguez, Reipurth/Olberg/Booth, Haikala, Radford/Cernicharo/Greve, Crane/Mandolesi/Palazzi/Kutner, Wouterloot/Brand, Stutzki/Zinnecker/Drapatz/Genzel/Harris/Olberg/Rothermel.
July: Burton/Liszt, Reipurth/Olberg/Booth, Wielebinski/Mebold/Whiteoak/Harnett/Dahlem/Loiseau, Bosma/Deharveng/Lequeux, Prusti/Clark/Wesselius/Laureijs, Dettmar/Heithausen/Hummel, Henkel/Wiklind/Wilson, Loiseau/Harnett/Combes/Gérin, Henkel/Wilson, Pottasch/Pecker/Sahu/Srinivasan, Moneti/Natta/Evans, Bajaja/Hummel, Bajaja/Harnett/Loiseau, Pérault/Falgarone/Boulanger/Puget, Dennefeld/Pérault/Bottinelli/Gouguenheim/Martin.
September: Chini/Kreysa/Mezger, Gérin/Combes/Buta, Dupraz/Casoli/Combes/Gérin/Salez, Combes/Casoli/Dupraz/Gérin/Harnett/Loiseau, Combes/Casoli/Dupraz/Gérin, Gérin/Combes/Casoli/Nakai/Hummel/van der Hulst, Melnick, Lellouch/Combes/Encrenaz T./Gérin, Casoli/Combes/Dupraz/Gérin, Booth/Nyman/Winnberg/Olofsson/Sahai/Habing/Omont/Rieu.

Pre- and Post-Perihelion Spectrographic and Photometric Observations of Comet Wilson (1986 ℓ)

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Hardly had Halley's comet left our immediate vicinity when a relatively bright, "new" comet, Wilson (1986 ℓ), was discovered in the summer of 1986. The announcement of this discovery was the more exciting as early predictions gave some hope that the newcomer might become of similar brightness to Halley's in April–May 1987, just about one year after P/Halley had made its own show. As the comet would be located in the southern sky at that time, and encouraged by our successful Halley runs at ESO, we proposed a programme that would give the opportunity to make a comparison between two comets of quite different dynamical ages observed at similar distances from the sun and with similar instrumentation. Another comparison seemed interesting: to study the behaviour of the comet before and after its passage through perihelion, which occurred on 21 April, 1987. Indeed we were able to carry out observations in April and in May, both spectrographic (2.2-m ESO-MPI telescope, 1.4-m CAT + CES, and 1.5-m telescope) and photometric (0.5-m ESO telescope). Some of the most significant results of these observations will be described briefly here. They refer to spectra in the ultraviolet, blue and red regions, as well as to photometry through narrow-band filters.

Comet Wilson proved to be considerably fainter than had been anticipated on the basis of the optimistic predictions. In early April it was estimated to be roughly four times weaker than comet Halley had been one year earlier at the same heliocentric distance. However, as far as spectrography was concerned, this weakness was, in a sense, compensated by the use of CCD detectors, which had not been available during our observations of P/Halley.

This was indeed a great improvement, for CCD's are particularly suitable for the observations of extended objects: in addition to their high quantum efficiency, linearity and high dynamic range, they offer the crucial advantage of two-dimensional detectors, allowing the determination of the spatial distribution of the spectral emissions over an appreciable region of the object. Furthermore, when they are used at the Cassegrain focus, as with the 2.2-m and the 1.5-m telescopes, one avoids the loss of spatial resolution caused by the field rotation inherent to the coudé focus (where photographic plates were traditionally used in cometary spectroscopy). Knowledge of the radial profiles of the cometary emissions is absolutely necessary to analyse the physical processes responsible for the formation and for the excitation of the various emitting species, to evaluate their production rates, to construct or to test models of the coma and tail. It can also help in the identification of new spectral lines, since the extent of a given emission on each side of the comet centre is related to the nature of the particular atom or molecule involved (neutral or ionized species; short- or long-lived particle).

Ultraviolet – Blue Region

Particular emphasis was laid upon the near ultraviolet because this region has been as yet poorly explored. Besides, advantage was taken of the availability of a CCD with fluorescent coating for ultraviolet sensitivity. The importance of the UV-blue region stems also from the fact that it contains emissions of OH, CO_2^+, OH^+, CO^+, hence information related to the abundance ratios of the major constituents of the cometary material, water and the carbon oxydes.

As an example, a spectrum obtained at moderate resolution is shown in Figure 1. The heliocentric distance (r) of the comet was 1.21 A.U. pre-perihelion, and its geocentric distance (Δ) was 0.95 A.U. The upper tracing corresponds to a strip 10 arcsec or 7,000 km wide, approximately centred on the nucleus, extracted from the CCD. The flux unit is arbitrary on this and the two other plots. No correction has been applied to take out the atmospheric extinction and the instrument + detector response, in order to illustrate the tremendous attenuation produced by these effects. For instance, the difference in overall flux reduction between 387 nm and 308.5 nm amounts to about 4 magnitudes in this case: the OH (O-O) band is, in fact, appreciably stronger than the CN (O-O) band, outside the earth's atmosphere. The middle and bottom panels compare, at a magnified scale, extractions of the same width as above, but offset by about 40,000 km on each side of the