

are randomly distributed in angle in a tumbling bar with aligned inner shells since in the inner parts the orbital time is smaller than the tumbling period, and the inner shells can feel a prolate potential. Secondly the dust lane is too close to the centre of the galaxy to feel a "smoothed" potential when all the shells feel a prolate potential.

## Conclusions

The complementary observations made at ESO brought a decisive contribution to the comprehensive study of NGC 3923 which is about to be published (Prieur 1987). With other observations from AAT and CFHT they allowed us to obtain accurate positions of faint shells around the galaxy, and measure physical parameters which can be directly compared to theoretical models and numerical simulations. It was found that models published until now do not fully account for the properties that we have observed. Among the current models the merging model seems to be the more likely to be able to solve the problem. The main theoretical problem is the modelling of dynamical friction in the centre of the galaxy (which is far from being negligible as some authors thought). This study provides new parameters which had never been measured and which go further than what numerical simulations or theoretical studies have been able to predict until now. We hope that this work will stimulate new theoretical developments on this field.

These observations with EFOSC as a focal reducer demonstrate that this instrument can also be a very efficient and powerful tool for photometry of extended objects. The decisive data used in this paper came from only a few 7-minute exposures!

## Acknowledgements

I am very grateful to Sandro D'Odorico for obtaining the CCD pictures of NGC 3923.

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## Visiting Astronomers

### (October 1, 1987–April 1, 1988)

Observing time has now been allocated for Period 40 (October 1, 1987–April 1, 1988). As usual, the demand for telescope time was 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

*October 1987:* Moorwood/Oliva, Danziger/Moorwood/Oliva, Bergvall/Johansson, Moeller/Kjaergaard Rasmussen, Pickles/van der Kruit, Soucail/Fort/Mathey/Mellier/D'Odorico, Mellier/Soucail/Fort/Mathey, Bergeron/Bossé, Maccagni/Vettolani, Danziger/Gilmozzi, Benvenuti/Porceddu.

*November 1987:* Benvenuti/Porceddu, Kudritzki/Humphreys/Groth/Butler/Stenbock/Gehren/Fitzpatrick, Wolf/Stahl/Davidson/Humphreys, Reitermann/Bascheck/Scholz/Krautter/Wolf, Richtler, Surdej/Courvoisier/Magain/Swings, Butcher/Mighell/Buonanno, Ellis/Couch/D'Odorico, Schwarz/Larsson, Chincarini/Manousosyanaki, Breyssacher/Azzopardi/Lequeux/Meysonnier/Rebeiro/Westerlund, di Serego Alighieri.

*December 1987:* Westerlund/Azzopardi/Rebeiro/Breysacher, Azzopardi/Lequeux/Westerlund, Pottasch/Pecker/Karoji/Sahu, Zadrozny/Leggett/Perrier, Kern/Merkle/Lacombe/Léna, Nesci/Perola, Westerlund/Lundgren/Edvardsson, Kunth/Schild/Arnault, Melnick, Cristiani/Barbieri/Clowes/Iovino/Nota, Melnick, Wampler, Reimers/Schröder/Toussaint.

*January 1988:* Reimers/Schröder/Toussaint, Becker/Appenzeller/Wilson/Schulte-Ladbeck, Koornneef/Israel, Bouvier/Bertout, Giraud, Bignami/Caraveo/Vigroux, Renzini/D'Odorico/Greggio/Bragaglia/Federici, Östreicher/Ruder/Seifert/Wunner, Mathys/Maeder, de Loore/David/Hensberge/Verschueren/Blaauw.

*February 1988:* de Loore/David/Hensberge/Verschueren/Blaauw, Rosa, Danziger/Cristiani/Guzzo, Meylan/Djorgovski, Röser/Meissenheimer/Perley, Trinchieri/di Serego Alighieri, Bianchi/Grewing/Bässgen M., François/Matteucci.

*March 1988:* François/Matteucci, Kudritzki/Méndez/Husfeld, Ruiz/Maza/Méndez, Jakobsen/Perryman, Pottasch/Manchado/Mampaso, Jarvis/Martinet, Le Bertre/Epcstein, Dennefeld/Bottinelli/Gouguenheim/Martin, Krautter/Mundt/Hessman/Ray, Israel/van Dishoeck.

### 2.2-m Telescope

*October 1987:* MPI time, Schwarz.

*November 1987:* Schwarz, Landi Degl'Innocenti/Landolfi/Pasquini, Bues/Pragal, Gouffres/Cristiani, Surdej/Courvoisier/Kellermann/Kühr/Magain/Swings/Refsdal, Cayrel/Tarrab, Butcher/Mighell/Buonanno, Christensen/Sommer-Larsen/Hawkins, Westerlund/Azzopardi/Rebeiro/Breysacher.

*December 1987:* Gouffres/Cristiani, Fusi Pecci/Buonanno/Corsi/Greggio/Renzini/Sweigart, Fusi Pecci/Buonanno/Corsi/Ferraro/Bragaglia, Meylan/Djorgovski, Parese/Burrows/Viotti/Lamers, Weigelt/Baier/Fleischmann.

*January 1988:* Lyngå/Johansson, Le Bertre/Epcstein, Courvoisier/Bouchet/Robson, Tanzi/Bouchet/Falomo/Maraschi/Treves, Pakull/Stasinska/Testor/Motch/Heydari-Malayeri, Wouterloot/Brand/Stirpe, Reipurth/Zinnecker, Rodriguez Espinosa/Stanga, MPI time.

*February 1988:* MPI time, Schwarz/Larsson.

*March 1988:* Schwarz/Larsson, Schwarz/Aspin/Magalhaes/Schulte-Ladbeck, Durret/Boisson/Bergeron, Krautter, Galletta/Bettoni, Ulrich/Pierre, Tosi/Focardi/Gregio, Piotto/Capaccioli, Capaccioli/Held/Nieto, Aurière/Koch-Miramond/Cordoni, Ögelman/Aurière/Alpar, Gouffres/Cristiani.

### 1.5-m Spectrographic Telescope

*October 1987:* Lortet/Testor, Danziger/Fosbury/Lucy/Wampler, Schwarz, Johansson/Bergvall, Dettmar/Barteldrees, Maccagni/Vettolani, Herczeg/Drechsel.

*November 1987:* Herczeg/Drechsel, Pasquini/Schmitt, Bues/Müller/Rupprecht, Bertola/Buson, Sauvageot/Dennefeld, Balkowski/Maurogordato/Proust/Talavera, Danziger/Fosbury/Lucy/Wampler.

*December 1987:* Danziger/Fosbury/Lucy/Wampler, Courvoisier/Bouchet, Pottasch/Pecker/Karoji/Sahu, Mantegazza, Lundgren, Rafanelli/Marziani, Divan/Prévôt-Burnichon, Danziger/Fosbury/Lucy/Wampler.

*January 1988:* Danziger/Fosbury/Lucy/Wampler, Tanzi/Bouchet/Falomo/Maraschi/Treves, Bica/Alloin, de Ruiter/Lub, Alloin/Baribaud/Pelat/Phillips, Tarrab, Thé/Westerlund/Vardya, Danziger/Fosbury/Lucy/Wampler.

*February 1988:* Möllenhoff/Bender/Madejsky, Arsenault/Durand, Duerbeck, Danziger/Fosbury/Lucy/Wampler, Gerbaldi/Faraggiana/Castelli.

*March 1988:* Gerbaldi/Faraggiana/Castelli, Friedjung/Bianchini/Sabbadin, Alloin/

Baribaud/Pelat/Phillips, Acker/Stenholm/Lundström, Alloin/Baribaud/Pelat/Phillips, Bertola/Buson/Vietri, Vettolani/Fairall/Da Costa/Chincarini, Drechsel/Andreae, Danziger/Fosbury/Lucy/Wampler, Courvoisier/Bouchet.

#### 1.4-m CAT

October 1987: Solanki/Mathys, Holweger/Gigas/Lemke, Gratton, Spite F./Spite M.

November 1987: Spite F./Spite M., Benvenuti/Porceddu, Waelkens, Lagrange/Ferlet/Vidal-Madjar, Ferlet/Andreani/Dennefeld/Vidal-Madjar, Andreani/Ferlet/Vidal-Madjar/Grenier, Ferlet/Vidal-Madjar/Gry/Lallement, Lagrange/Ferlet/Vidal-Madjar, Barbay/Arnould/Jorissen.

December 1987: Barbay/Arnould/Jorissen, Grenon/Barbuy, Pottasch/Sahu, Barbuy, Pallavicini/Giampapa, Stahl/Schwarz/Wolf/Zickgraf, de Vries/van Dishoeck/Habing, Stahl/Schwarz/Wolf/Zickgraf.

January 1988: Reimers/Toussaint/Schröder, Stahl/Schwarz/Wolf/Zickgraf, Gustafsson/Edvardsson/Magain/Nissen, Gustafsson/Saar/Vilhu, Cayrel de Strobel.

February 1988: Cayrel de Strobel, Vladilo/Beckman/Crivellari/Molaro, Gillet/Pelat, Lundgren, Lenhart/Grewing/Neri.

March 1988: Lenhart/Grewing/Neri, Vreux/Magain.

#### 1-m Photometric Telescope

October 1987: Hesselbjerg Christensen, Johansson/Bergvall, Böhnhardt/Vanysek/Beißer, Di Martino/Zappala/Cellino/Farinella, Wolf/Stahl/Davidson/Humphreys.

November 1987: Wolf/Stahl/Davidson/Humphreys, Catalano F.A./Kroll, Liller/Alcaíno, Bues/Pragal, Bues/Müller/Rupprecht, Chini/Krügel.

December 1987: Chini/Krügel, Heske/Wendker, Courvoisier/Bouchet, Busso/Silvestro/Scaltriti/Persi/Robberto, Mattila/Schnur, Barucci/Fulchignoni/Harris/Zappala/Binzel/Di Martino/Lagerkvist/Burchi/Dipaloantonio, Lyngå/Johansson.

January 1988: Lyngå/Johansson, Courvoisier/Bouchet, Kaelble/Kappelmann/Grewing, Le Bertre/Epcstein, Reipurth/Zinnecker,

Spinoglio/Persi/Coe/Ferrari-Toniolo, Westerlund/Pettersson, Balkowski/Arimoto/Boisson/Durret.

February 1988: Balkowski/Arimoto/Boisson/Durret, Thé/Westerlund/Vardya, Greenberg/Thé/Chlewicki, Courvoisier/Bouchet, Le Bertre/Epcstein, Schoemb/Barwig/Mantel, Poulain/Davoust/Nieto, Kohoutek/Martin.

March 1988: Kohoutek/Martin, Le Bertre/Epcstein, Courvoisier/Bouchet, Mermilliod/Claria, Antonello/Conconi/Mantegazza/Poretti, Moneti/Stanga.

#### 50-cm ESO Photometric Telescope

October 1987: Group for Long Term Photometry of Variables.

November 1987: Wolf/Stahl/Davidson/Humphreys, Poretti/Antonello, Pospieszalska-Surdej/Surdej/Taylor, Cutispoto/Rodono/Ventura/Catalano F./Butler.

December 1987: Cutispoto/Rodono/Ventura/Catalano F./Butler, Mattila/Schnur.

January 1988: Debehogne/Di Martino/Zappala/De Sanctis/Lagerkvist/Magnusson, Waelkens/Cuypers.

February 1988: Waelkens/Cuypers, Thé/Westerlund/Vardya, Greenberg/Thé/Chlewicki, Kohoutek, Barrera/Mennickent/Vogt.

March 1988: Barrera/Mennickent/Vogt, Group for Long Term Photometry of Variables.

#### GPO 40-cm Astrograph

October 1987: Böhnhardt/Vanysek/Beißer. November 1987: Scardia.

January 1988: Debehogne/Machado/Cadeira/Vieira/Netto/Zappala/De Sanctis/Lagerkvist/Mourao/Protitch-Benishek/Javan-shir.

February 1988: Elst/Ivanova/Shkodrov/Geffert, Mermilliod/Heudier.

March 1988: Ferreri/Zappala/Di Martino/De Sanctis/Debehogne.

#### 1.5-m Danish Telescope

October 1987: Gammelgård, Jørgensen et al., Hansen et al., Helmer et al., Lindgren/Ardeberg.

November 1987: Lindgren/Ardeberg, Griffin R.F./Griffin R.E.M./Mayor/Clube, Imbert, Imbert/Maurice/Prévot/Andersen/Nordström/Ardeberg/Lindgren/Mayor, Richtler, Leibundgut/Tamman, Noergaard-Nielsen/Hansen/Joergensen, Sauvageot/Dennefeld, Alcaino/Liller, Jönch-Sørensen/J. Knude.

December 1987: Jönch-Sørensen/Knude, Reipurth, Jönch-Sørensen/Knude, Becker/Appenzeller/Wilson/Schulte-Ladbeck.

January 1988: Becker/Appenzeller/Wilson/Schulte-Ladbeck, Gouiffes/Cristiani, Giraud, Melnick, Della Valle/Rosino/Ortolani/Cappellaro/Turatto, Westerlund/Pettersson, v. Paradijs/v. d. Klis/Charles, Andersen/Nordström.

February 1988: Anderson/Nordström, Möller/Rasmussen, Hansen et al., Reiz et al., Andersen/Nordström/Mayor/Olsen.

March 1988: Andersen/Nordström/Mayor/Olsen, Lindgren/Ardeberg, Mayor/Duquennoy/Andersen/Nordström, Galletta/Bettoni, Ortolani/Piotti, Ortolani/Gratton.

#### 50-cm Danish Telescope

October 1987: Olsen, Grenon/Lub.

November 1987: Grenon/Lub, Lindgren/Ardeberg.

December 1987: Lindgren/Ardeberg, Group for Long Term Photometry of Variables.

January 1988: Group for Long Term Photometry of Variables, Olsen/Gray.

February 1988: Olsen/Gray, Pellegatti Franco, Lindgren/Ardeberg, Clausen et al.

March 1988: Clausen et al., Helt/Clausen/Giménez/Vaz.

#### 90-cm Dutch Telescope

November 1987: Grenon/Lub, v. Amerongen/v. Paradijs.

December 1987: v. Amerongen/v. Paradijs.

January 1988: de Geus/Lub/Blaauw/de Zeeuw, de Ruiter/Lub, de Loore/David/Blaauw/Hensberge/Verschueren, de Ruiter/Lub, Thé/Westerlund/Vardya.

February 1988: Thé/Westerlund/Vardya.

March 1988: Heynderickx, Caspers, Brand/Wouterloot.

## IC 3370: a Box-Shaped Elliptical or S0 Galaxy?

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### I. Introduction

It has now been established that a significant portion ( $\geq 1$  per cent, Jarvis 1986) of disk galaxies have box- or peanut-shaped bulges. However, until fairly recently, it was generally believed that no elliptical galaxies existed which possessed these same box- or peanut-shaped characteristics. If such ellipticals do exist, then they would be interesting for several reasons. The May et al. (1985) models for box- and peanut-

shaped bulges required a large amount of rotation in order to support these shapes. However, we know that most bright elliptical galaxies ( $M_B \leq -21.0$ ) rotate slowly. Hence, a possible dichotomy may exist if bright box- or peanut-shaped "elliptical"-like (i.e. no disk) galaxies could be found which rotate as rapidly as the current models require. Such galaxies may also provide important formation, evolutionary and dynamical links between classical ellip-

tical and disk galaxies. Fairly recently, several galaxies classified in the literature as ellipticals have indeed been found which do show strong box-like features. We report here some of the most interesting results of one of these galaxies, IC 3370.

The southern galaxy IC 3370 is classified as an E2pec in the Revised Shapley Ames Catalogue of Bright Galaxies and an E2 in the Second Reference Catalogue of Bright Galaxies.