

Curriculum Vitæ

Name:	Paul David Bristow <i>PhD, BSc(Hons, first class)</i>	Date of Birth:	13/05/71
Place of Birth:	Oxford, UK.	Nationality:	British
Marital Status:	Single	Current Position:	HST Science Archive Software Specialist
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Current Position

Science Archive Software Specialist in the Space Telescope European Co-ordinating Facility (ST-ECF located at the European Southern Observatory, ESO) Instrument Physical Modelling Group. We are responsible for the Calibration Enhancement (CE) project, which aims to enhance the ostensibly empirical data reduction pipelines developed at the Space Telescope Science Institute for NASA/ESA's Hubble Space Telescope, by the application of physically motivated solutions to specific calibration problems.

I have worked in particular on the flat fielding and dark current corrections for the Faint Object Spectrograph and have developed a model to remove the effects of imperfect charge transfer efficiency in Space Telescope Imaging Spectrograph (STIS) CCD data (in principle applicable to other space based CCD detectors). Our current project aims to apply a technique developed for STIS, which derives a highly accurate wavelength calibration via an optical model, to CRIRES, an infra red spectrograph being built for ESO's Very Large Telescope. I also work on solutions for miscellaneous coding problems arising in other aspects of the CE project, e.g. the automatic identification and classification of spectral lines from laboratory measurements of calibration lamps. In addition I maintain our web pages: <http://www.stecf.org/poa>

My work demands ability to find coding solutions in a variety of programming languages, making use of several data reduction environments, accessing various archives and databases and an understanding of the astrophysical data in question.

My contract was extended once, but cannot be extended further and will run out in October 2005.

Previous Positions

- Scientific Assistant in the Operational Research Department at NATO's SACLANT Undersea Research Centre, La Spezia, Italy. I was involved in the development of an operational decision aid. I worked on many aspects of the project including the environmental database, search algorithms, a RADAR model, testing and documentation.
- Five months at the ST-ECF (see above) working on a project which refined the Space Telescope Wide Field and Planetary Camera 2 archive data pipeline so that it incorporated the cosmic ray removal of associated exposures. The work involved manipulation of databases, automating data reduction procedures and providing a service to users via the internet. This project has been subsequently developed as the "WFPC2 Associations Project", an early step in the direction of the virtual observatory concept.

Education

Postgraduate (1992-1996): PhD in Astrophysics (accepted unconditionally at the first examination). The first two years of research were conducted at the University of Wales, Cardiff, but the work was completed at Bristol University, I officially graduated from Cardiff. My thesis title was "Simulating Faint Galaxy Fields." The research involved Monte-Carlo style simulations of galaxy populations leading to artificial data which could be compared to real observations. The software has been used to constrain parameters describing the underlying large scale galaxy distribution.

Undergraduate (1989-1992): BSc (Hons) in Astrophysics (First Class), University of Wales, College of Cardiff. Awarded Selby Scholarship for performance in first year. Final year project involved the simulation of infra red emission from dust in the disc of the Milky Way.

School (1985-1989): Cheney Secondary School, Headington, Oxford. 'A' Levels (1989): **Mathematics A, Physics A, Further Mathematics B.**

Skills

Computing

I regularly use the following languages/applications:

- PYTHON
- UNIX (SOLARIS/LINUX/MAC OS X)
- IRAF/PYRAF
- EMACS & XEMACS
- HTML/DREAMWEAVER
- LATEX
- FITS data
- Plotting packages such as XGOBI and SM
- C

I also have some experience (either occasional use in my current work or regular use in the past) with:

- Shell scripts
- PERL
- IDL
- SQL
- CGI scripts
- STARLINK software
- MS DOS
- FTP
- Debugging utilities
- VMS
- MS WORD/OFFICE
- MATLAB
- Various graphics packages
- Delphi (OO pascal)
- FOREHELP

Teaching/Inter-personal

I have supervised and marked the work from preliminary year physics laboratory classes and 1st year Astronomy exercise classes. I currently have a German physics student doing a “Praktikum” project for me. I have also marked the work from a second year theoretical physics course.

I have enjoyed the experience of working with international colleagues in scientific project teams and have also gained considerable ‘team leadership’ experience from my involvement in athletics (see ‘Interests’).

Fieldwork

I have spent two, two week periods at the Observatorio del Roque de los Muchachos in La Palma operating the ‘HitchHiker’ parallel Camera on the William Herschel Telescope.

Languages

Mother Tongue: **English**. I have spent several years living and working in **Italy** (2yrs) and **Germany** (5yrs) and have learnt to speak, read and write both languages fluently.

Interests

Running: I am involved in track and field athletics and cross country running at many levels. I was an active member of Cardiff University Running Club for 5 years (awarded colours in 91 and 95), captaining it in '93/4 during which we achieved our best ever results in many competitions. As captain I organised trips to races in Paris and many destinations in the UK along with training programmes, social events and a 24 hour, 200 mile sponsored relay run across Wales in aid of ‘Children in Need’. I have since helped with the organisation of Bristol University Track and Field Club (awarded half colours in '95). I have competed for my home club, Oxford City AC, in all age groups, receiving the “Men’s track athlete of the year” award in 1992 and now compete for Cardiff AAC in the British Athletics League as well as Trionfo Ligure in Italy and LG München in Germany. In recent years I have enjoyed training and competing with groups in Italy and Germany. Last year I won a bronze medal in the 800m at the Southern German Championships and was awarded the Men’s athlete of the year award by LG München. I am also a running shoe tester for Adidas.

Other Sports: I take part in many other sports (snowboarding, skiing, football, mountain-biking, orienteering, wakeboarding, water-skiing, roller-blading etc.) at a much less competitive level.

J.R.R.Tolkien: I have been fascinated by the work of this author for many years.

Travelling: I have “backpacked” around mainland Europe several times, I currently enjoy travelling for work in Europe and the US. Recently I snowboarded in the Indian Himalayas and attended conferences in Tokyo, Victoria, New Mexico, Hawaii, and Cozumel, taking the opportunity to explore the surroundings on these occasions.

Publications

On the Baryon Density of the Universe.

Bristow, P. D. & Phillipps, S., 1994. *Mon. Not. R. astr. Soc.*, **267** 13.

Simulating Wide Field Images.

Bristow, P. D. & Phillipps, S., 1995b. *I. A. U. Wide Field Imaging Newsletter.*, **7**, 12.

Isophotal Effects in Faint Galaxy Samples.

Bristow, P. D. & Phillipps, S., 1995c. In: *New Light on Galaxy Evolution*, I.A.U. Symposium No. **171**, pp 347, eds R. Bender & R. Davies.

HST Counts of Elliptical Galaxies: Constraints on cosmological Models?

Driver, S. P., Windhorst, R. A., Phillipps, S. & Bristow, P. D., 1996. *Astrophys. J.*, **461** 525.

WFPCII Associations Project.

Bristow, P. D., Pirenne, B. & Micol, A., 1997. *ST-ECF Newsletter.*, **24**, 21.

Morphological Number Counts and Redshift Distributions to $I = 25$ from the Hubble Deep Fields: Constraints on Cosmological Models from Early Type Galaxies Phillipps, S., Driver, S. P., Couch, W.J., Fernandez-Soto, A., Bristow, P.D., Odewahn, S.C., Windhorst, R.A., & Lanzetta, K., 2000. *Mon. Not. R. astr. Soc.*, *Mon. Not. R. astr. Soc.*, **319** (3) 807.

Further Modelling of Morphological Number Counts to $I = 25$ from the Hubble Deep Fields Bristow, P.D. & Phillipps, S., 2001. ESO / ECF / STScI Workshop "Deep Fields" Proceedings, Eds S. Cristiani, A. Renzini and R. E. Williams, Springer-Verlag, p. 150.

From Theoretical to Observational Via Selection Effects, Bristow P. D. 2002, pp 265 in "New Trends in Theoretical and Observational Cosmology", Eds K. Sato and T. Shiromizu, Universal Academy Press.

Close-out and Final Improvement Of HST POA FOS/BLUE Archived Data, Alexov A., Bristow P., Kerber F., Rosa R., 2002, ASP Conf. Ser., **281**, 363

Data Processing Improvements that can be Made to Final Archives, Bristow P., Alexov A., Kerber F., Rosa R., 2002, ASP Conf. Ser., **281**, 265

Final Improvement of HST POA FOS/BLUE Archived Data and Pipeline Processing, Bristow P. D., Alexov A., Kerber F., Rosa, M. R., 2002, Proceedings of AAS meeting, **200**, 5905

Faint Galaxy Detection in Drizzled Data, Bristow P. D. and Hook, R., 2001 ST-ECF Newsletter pp 11, Vol. **30**.

Science from the refurbished FOS/BLUE archive: Interstellar absorption lines in a sample of low red-shift quasars, Kerber F., Wills B., Alexov A., Bristow P., Seifarth A., Rosa M. R., 2002, Proceedings of AAS meeting, **200**, 4018

Model Based Corrections to Data from Radiation Damaged Detectors, Bristow P., ADASS XIII 2003, ASP. Conf. Ser. **314**, 780

CCD Charge Transfer Efficiency, Bristow P., 2003, in ST-ECF Newsletter **34**, August 2003 edition

Modelling Charge Transfer on the STIS CCD, Bristow P., Alexov A., Kerber, F. and Rosa, A, 2002, in HST Calibration Workshop, STScI, p176.

FOS Post Operational Archive and STIS Calibration Enhancement, Rosa, A, Alexov A., Bristow P. and Kerber, F., 2002, in HST Calibration Workshop, STScI, p162.

Proper Motions of Dwarf Spheroidal Galaxies from Hubble Space Telescope Imaging. III: Measurement for Ursa Minor, Piatek et al. 2005 **Submitted to AJ**

Instrument Science Reports

(Full list of ISRs, posters and presentations and links at <http://www.stecf.org/poa/gendocs/>)

Bristow P. "STIS Model Based Charge Transfer Inefficiency Correction Example Science Case 1: Proper motions of Dwarf Galaxies", CE-STIS-2004-002

Bristow P. "Overview of the CE-STIS CTI Pre-Processor BETA", CE-STIS-2004-001

Bristow P. "Application of Model Derived Charge Transfer Inefficiency Corrections to STIS Photometric CCD Data", CE-STIS-2003-001

Bristow P., Alexov A. "Modelling Charge Coupled Device Readout: Simulation Overview and Early Results" CE-STIS-2002-01