

## Curriculum vitæ

### **Robert Andrew Ernest Fosbury**

*as of:* June 2012

*Date of birth:* 2nd April 1948  
*Place:* Farnham, Surrey, England  
*Nationality:* British  
*Present address:* Michael-Huber-Weg 12  
81667 München  
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*Married to:* Patricia Susan Fosbury (née Major-Allen)  
*Children:* Emma Louise – 1974, England  
Thomas Benjamin – 1977, Australia  
Andrew Daniel – 1977, Australia

*Present employer:* European Southern Observatory  
Karl Schwarzschild Straße 2  
85748 Garching bei München  
Germany  
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*Societies:* Fellow of the Royal Astronomical Society, Council service 1983, 1984  
Member of the International Astronomical Union  
Fluorescent Mineral Society: member of Research Chapter

**Present job**

2011-> European Southern Observatory (ESO) Astronomer Emeritus. I am also employed part-time by ESO to perform certain functions for them including editing the ESO Annual Report (<http://www.eso.org/public/products/annualreports/ann-report2010/>) and representing ESO (as an observer) at the United Nations Committee on the Peaceful Uses of Outer Space. As part of this UN work, I am a member of Action Team 14 which is tasked to make recommendations to the General Assembly and the Security Council for the mitigation of the threat of Earth impact of potentially hazardous Near Earth Asteroids (NEO). Also, I currently serve on the European Research Council panel for the evaluation of Advanced Grant proposals in Universe Sciences.

### **Previous jobs and appointments**

2003–2006 Visiting Professor at the University of Sheffield

1985–2010 Staff member (ESA) of the (Hubble) Space Telescope – European Coordinating Facility (ST-ECF): co-funded by the European Space Agency (ESA) and the European Southern Observatory and hosted by the latter organization at its headquarters near Munich. Initially the Head of the Science Instrument Information Group, I became Head of the ST-ECF in 2005. The job involved up to 50% personal scientific research. The ST-ECF was very closely integrated with the scientific life at ESO and I performed many functions for ESO during this period, including acting as interim head of the Public Outreach department and serving as co-chair of the ASTRONET Roadmap Panel E concerned with Education, Recruitment and Training, Public Outreach. As well as being the longest-serving member of the ESO Science Personnel Committee (recruitment and evaluation of scientists), I became the first elected chair (for a 3-year term) of the ESO Astronomy Faculty (possibly the largest astronomy faculty in Europe). I supervised graduate students from the ESO Studentship Programme and the International Max Planck Research School at the LMU and also mentored research fellows from ESO, ESA and the Royal Society. I was founder and editor of the ST-ECF Newsletter (1985–2001), which pioneered the use of desktop publishing in astronomy. This was

distributed to over 3000 astronomers around the world. I worked closely with the Space Telescope Science Institute in Baltimore and served on all four of NASA's Independent Science Reviews of the Hubble Space Telescope (chaired by Malcolm Longair and Martin Harwit). I served on NASA's *ad hoc* Science Working Group for the James Web Space Telescope Which decided the instrument complement for the observatory) and, subsequently, on the ESA Science Study Team for its NIRSpec Spectrometer.

1979–1984

Higher and then Principal Scientific Officer, Science and Engineering Research Council (SERC) at the Royal Greenwich Observatory, Herstmonceux, England. During this time I served on the SERC committee which advised the setting up of the UK STARLINK astronomical computer network—the first of its kind in the world. I subsequently became the first STARLINK project scientist. In about 1982, I became project scientist for the William Herschel Telescope instrumentation and continued in that job until taking leave to join ESA in 1985. During the early '80s, I proposed and then was involved in the specification, design, construction and commissioning of the Faint Object Spectrograph for the 2.5m Isaac Newton Telescope on La Palma. A similar device was later built for the 4.2m Herschel telescope. I observed on many telescopes around the world, including the VLA, the AAT and ESO instruments. In addition to my scientific research, I attended SERC management training courses and served for three years on their appointment and promotion interview boards. I supervised two students doing D.Phil. courses at the University of Sussex.

1977–1979

ESO Fellow, European Southern Observatory, Geneva (CERN), Switzerland. During this period, I was involved, with John Danziger, in organising the use of the Boksenberg Image Photon Counting System (IPCS) on the 3.6m telescope in Chile for extended periods. This detector was used by many European astronomers for a wide variety of observational programmes. On one occasion, it was accompanied by the TAURUS scanning Fabry-Perot interferometer.

1975–1977

SERC Anglo Australian Telescope fellow, based in Sydney, Australia. I was appointed as one of the first two AAT fellows and went to Australia just as the telescope was starting to come into general operation. This was a very rewarding period for me since this was, with the CTIO 4m and the ESO 3.6m, the first opportunity to explore the southern sky with a large optical telescope. I found it satisfying to be able to contribute to the task of making the AAT into what is often acknowledged to be the best optical telescope of its time. This was also the period which saw—with the use also of the 48 inch Schmidt in Australia and UKIRT on Hawaii—the rejuvenation of British optical astronomy. While at the AAT, I was particularly concerned with the spectrographs and the introduction of the Boksenberg Image Photon Counting System (IPCS) as a common-user detector.

1972–1975

SERC research fellow at the Royal Greenwich Observatory, Herstmonceux. During this pre- and post-doctoral fellowship, I was concerned with the first astronomical use of the Boksenberg IPCS, first on the small telescopes at the RGO and subsequently with the 2.5m Isaac Newton Telescope (INT) before its removal to La Palma. Working with Penston, Boksenberg and Sargent, we made spectrophotometric observations of extragalactic objects which were, I believe, regarded as the highlights of the use of the INT at its British site.

1969–1972

SERC studentship at the University of Sussex and the Royal Greenwich Observatory. This period led to a D. Phil thesis, supervised by Prof. B.E.J. Pagel, entitled: "Line widths in stellar chromospheres" (1973). Many of the observations for this work were obtained at Herstmonceux using the new generation of electronographic cameras being developed by McGee and McMullan at the University of London.

1966–1969

B.Sc.(hons) - grade III - in Physics at the University of Warwick. Secretary of the University Physics Society and founder member of the University Sailing Club.

1964–1966

Chigwell School, Chigwell, Essex.. A-levels in Maths and Physics.

→1964

Loughton School, Loughton, Essex. O-levels in 11 subjects.

## **PUBLICATIONS: R.A.E. FOSBURY — as of May 2012**

### **Refereed journals**

See: RAEF\_refereed-papers.pdf

### **Unrefereed publications**

See: RAEF\_unrefereed.pdf

### **Books**

Lindberg Christensen, Lars; Fosbury, Bob; Kornmesser, Martin. 2005. "Hubble – 15 Years of Discovery", Book and DVD (full-length feature film). [We believe that this is the most widely-distributed documentary DVD in history with about 1 million copies]. The book became a Wiley bestseller.

See: <http://www.spacetelescope.org/projects/anniversary/>

Lindberg Christensen, Lars; Fosbury, Robert; Hurt, Robert. 2009. "Hidden Universe"

See: <http://www.hiddenuniverse.org/>

[Both of these books are published in multiple languages by several publishers]

### **Non-astronomy articles**

Melissa S. Gerald, John Bernstein, Roystone Hinkson, Robert A.E. Fosbury, 2001. "Formal method for objective assessment of primate color", American Journal of Primatology, Volume 53, Issue 2, pages 79–85, February 2001

AMANDA D. MELIN, GILLIAN L. MORITZ, ROBERT A. E. FOSBURY, SHOJI KAWAMURA, NATHANIEL J. DOMINY, 2012. "Why Aye-Ayes See Blue", American Journal of Primatology, Volume 74, Issue 3, pages 185–192, March 2012

"Colour Beyond the Sky: the Chromatic Revolution in Astronomy", 2012, Tim Otto Roth and Robert Fosbury, in "Light | Image | Imagination: The Spectrum beyond Reality and Illusion", Editor: Martha Blassnigg, Associate editors: Hanna Schimek, Gustav Deutsch; Amsterdam University Press, in press

### **Public communication etc.**

During the late '90s, NASA asked ESO to take over the Hubble Public Outreach activities in Europe and the ST-ECF was asked to organize and carry out this function. Having met Lars Lindberg Christensen while teaching a summer school in Tromsø, I decided that he was probably the man to do this and so, after due process, we hired him. It is fair to say that he played a very major role in revolutionising European outreach in astronomy. I played a minor role in this by being his boss and injecting encouragement on occasions. For Hubble, we developed technology and (public) software for accessing astronomical image archives and creating very high dynamic range colour images of the sky. A large proportion, possibly more than half, of the stunning Hubble colour images seen by the public are created in Munich with the help of a distributed group of expert amateurs. We made feature-length DVD movies and created the 'Hubblecast' – the first video podcast series in full HD quality. Hubblecasts — and now ESOcasts — are freely available on iTunes and other channels had have proved extremely popular — often topping the science podcast charts. The ST-ECF/ESO outreach image and video archives are richly populated with a range of image qualities up to and including broadcast-quality (uncompressed) HD video that can be used directly by broadcasters without any administrative hassle.

This material is all available through:

<http://www.spacetelescope.org/> for Hubble and

<http://www.eso.org/public/> for ESO

I have benefited from all of this by playing roles as presenter, narrator and, sometimes, author. I feed back my own public talks into this system and benefit greatly from the content of the archives.

I enjoy presenting public talks and regularly give them at different venues, many in Munich but often also in England and other places. I do this not only because I like to but also because I feel I owe a debt to the public that have paid me to play with my toys around the world and in space. One of my talks — The Liverpool John Moores University First Annual Public Lecture in Astronomy — is available, in full at:

[http://www.ljmu.ac.uk/NewsUpdate/index\\_119727.htm](http://www.ljmu.ac.uk/NewsUpdate/index_119727.htm)

To celebrate Hubble's 20<sup>th</sup> birthday in orbit I organized, with colleagues in Baltimore and Padua, a major Hubble science conference in the Palazzo Franchetti on the Grand Canal in Venice. With the enthusiastic cooperation of the Istituto Veneto di Scienze, Lettere ed Arti, we were able to use the beautiful Palazzo Loredan to mount and month-long exhibition of Hubble images and artefacts with the cooperation of ESA and NASA. This attracted many visitors (over 12,000) including many school groups. We were also able to show the "From the Distant Past" laser installation created by Tim Otto Roth and Benjamin Staude. This installation was subsequently invited to Baltimore and New York to be shown in similarly prominent venues.

Conference: "Science with the Hubble Space Telescope III – two decades and counting", Venice, October 2010.

See: <http://www.stecf.org/conferences/HST3/>

And: <http://www.spacetelescope.org/announcements/ann1014/>

And associated public exhibition: "The Hubble Space Telescope – twenty years at the frontier of science", September 16 - October 15, 2010

Held at the Istituto Veneto di Scienze, Lettere ed Arti, Palazzo Loredan, Campo S. Stefano 2945, 30124, Venice, Italy

See: <http://www.stecf.org/conferences/HST3/exhibition/>

The exhibition brochure which I produced with my co-organisers is at:

<http://www.stecf.org/conferences/HST3/exhibition/HST3-brochure-72dpi.pdf>

"From the Distant Past", Art installation with Tim Otto Roth in Venice (2010), Baltimore (2011) and New York City (2011).

See: <http://www.imachination.net/distantpast/>

### **Open photography and spectroscopy**

I have an active flickr site ( [http://www.flickr.com/photos/bob\\_81667/](http://www.flickr.com/photos/bob_81667/) ) that includes innovative photography (infrared, ultraviolet, stereo, high-dynamic-range etc.) as well as a selection of my spectroscopic observations and associated images. As of now (June 2012), images on the site have been viewed over 74,000 times.

One of the large groundbased astronomical images I constructed, with the considerable contributions of an ESO Fellow, was selected by Apple for its "Inside the Image" series:

<http://www.apple.com/science/insidetheimage/fosbury/>

This was, as far as I know, one of the first applications of the 'tone-mapping' methodology to a large astronomical image. This has become one of the 'iconic' ESO images in the eyes of the public.

Some years ago I 'rediscovered' the fact that ozone in the atmosphere has a profound effect on the colour of the sky, a fact that is still not widely appreciated. After doing these experiments, I managed to unearth a few early references — from the '50s — which had pointed this out based on more primitive measurements than I can do with my spectrometers now. The consequence of this was that I carried out a summer project with two 15-year old students from the French School in Munich and published the results in the ESO Messenger:

<http://www.eso.org/sci/publications/messenger/archive/no.143-mar11/messenger-no143-27-31.pdf>

This paper was subsequently uplinked to the ISS by one of the astronauts to enliven their observation of sunsets and sunrises!

For several years, I have been collaborating with Tarja Trygg (Aalto University School of Art and Design, Helsinki, Finland) by exposing small pinhole cameras for many months: a procedure known as Solargraphy of which Tarja was one of the developers. In particular, I arranged for several cameras to be exposed for approximately six months (solstice to solstice) at the ESO observatories in Chile. The results were written up in the ESO Messenger (<http://www.eso.org/sci/publications/messenger/archive/no.141-sep10/messenger-no141-43-45.pdf>). These and other solargraphs can be seen at:

[http://www.flickr.com/photos/bob\\_81667/sets/72157620933251618/](http://www.flickr.com/photos/bob_81667/sets/72157620933251618/)

Our solargraphs have proved to be my most popular images on flickr.

### **Community Service and Professional Colloquia and Seminars**

During my career, I have served on many committees, panels and reviews. I have also given my share of invited colloquia and seminars around the world. I have not attempted to list them here.

