The Hα photometric surveys of the galactic plane: IPHAS and VPHAS+

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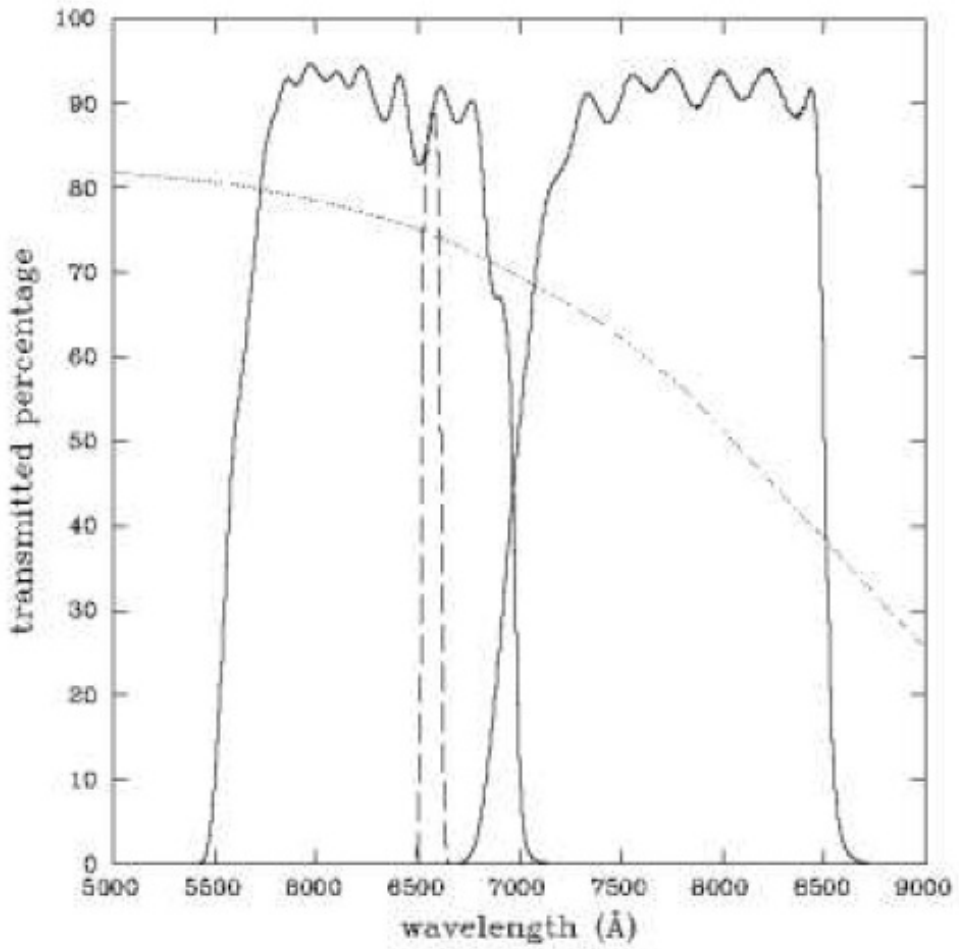
The IPHAS photometric survey

IPHAS: The INT/WFC Photometric Hα Survey of the Northern Galactic Plane

- Photometric survey in Hα, r' and i' filters
- Extended to the northern galactic plane, $5 > b > -5$ (1800 sq. deg.)
- Magnitude range $13 <$ r' < 20
- Observations started in 2003, and are almost completed by now

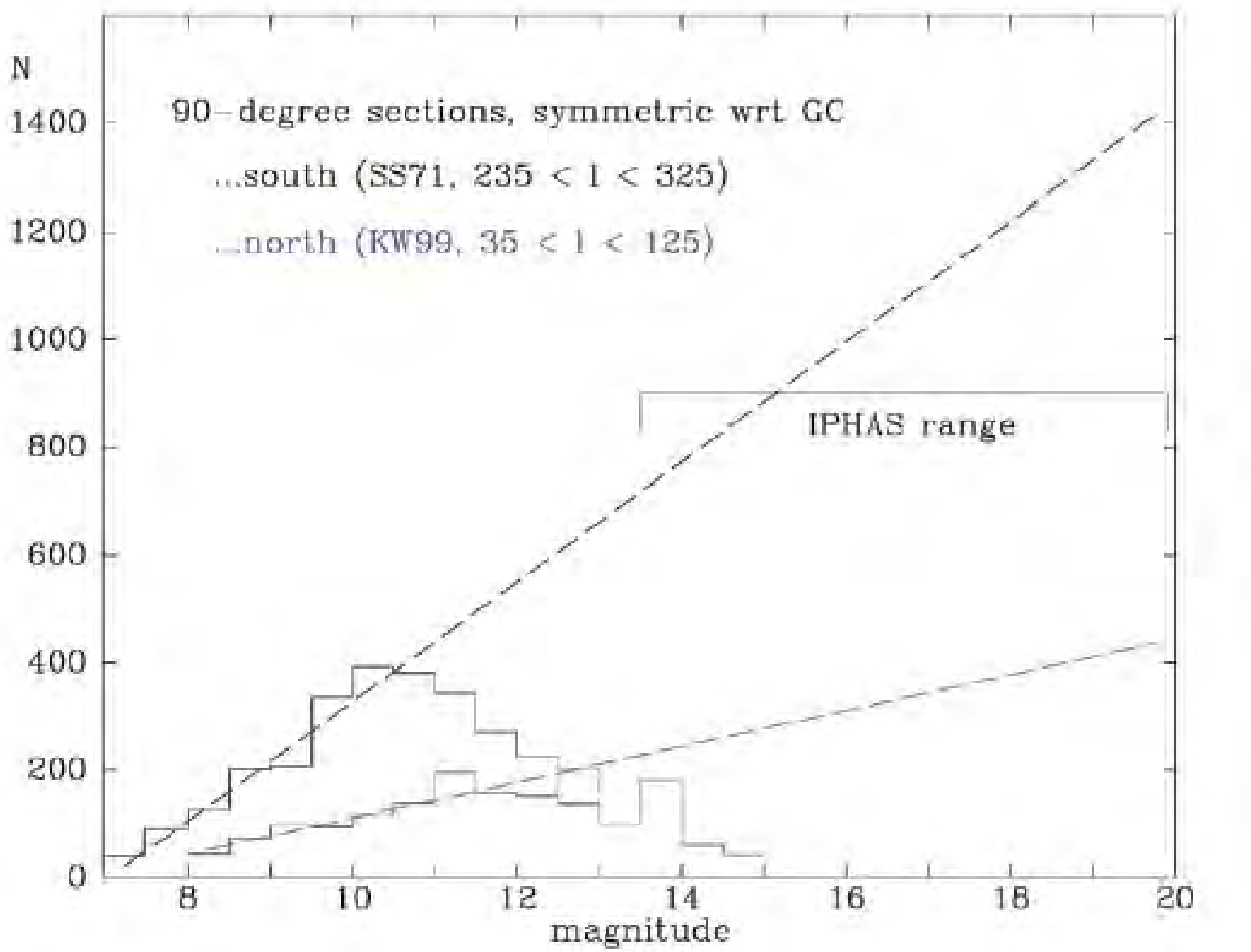
IPHAS home: http://www.iphas.org

The IPHAS filters bandpasses

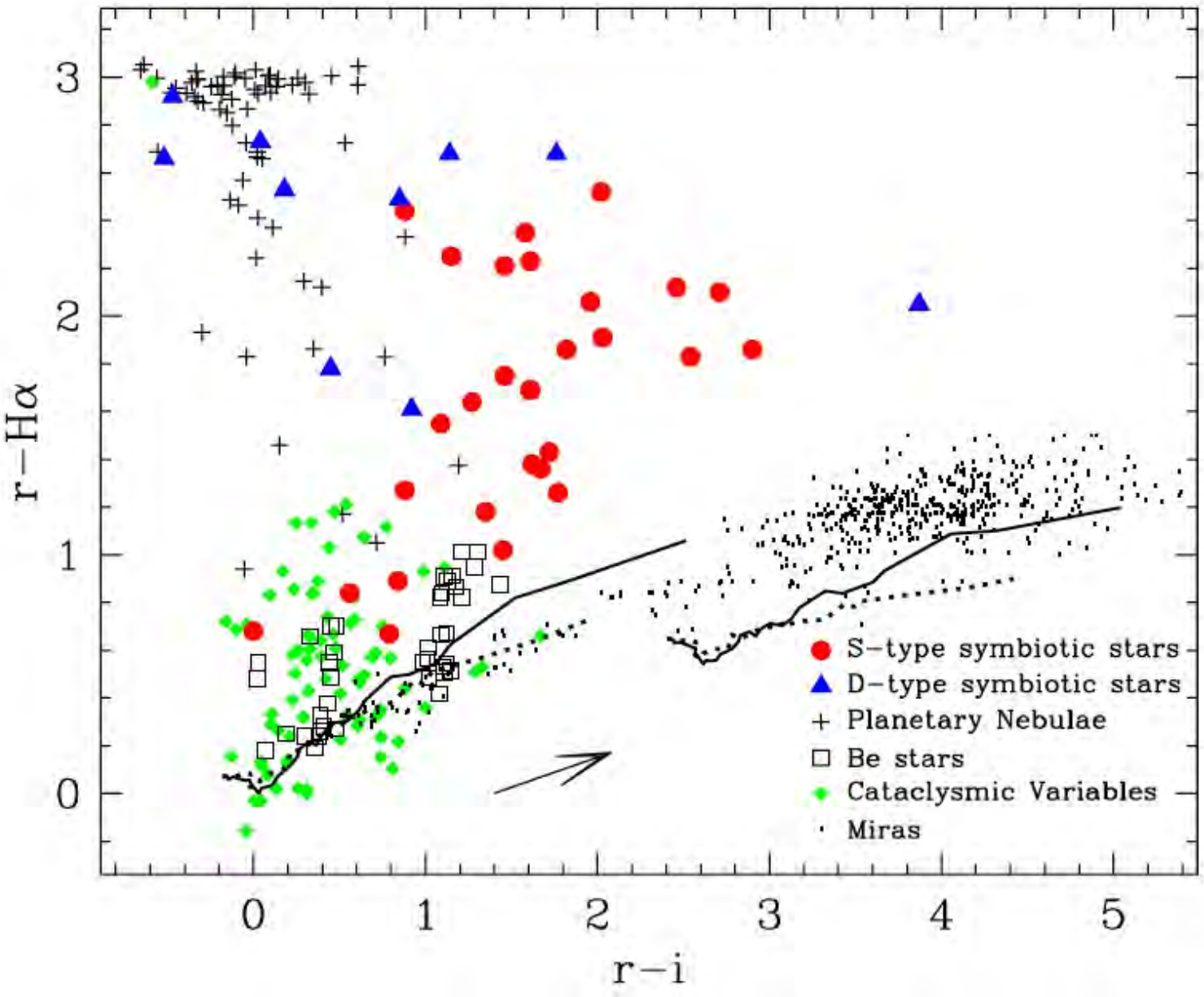


IPHAS homepage

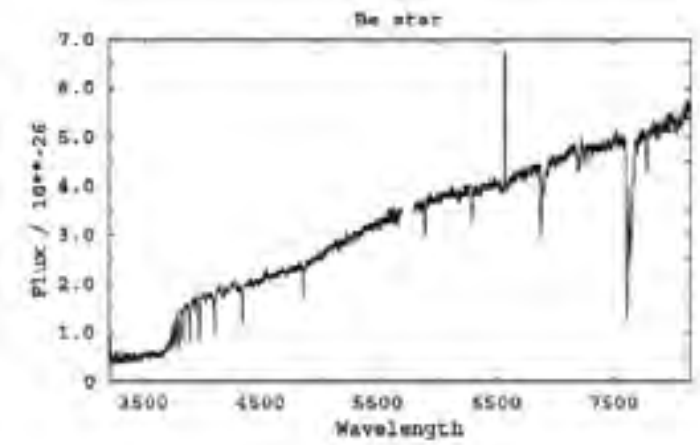
Estimation of emission line stars numbers

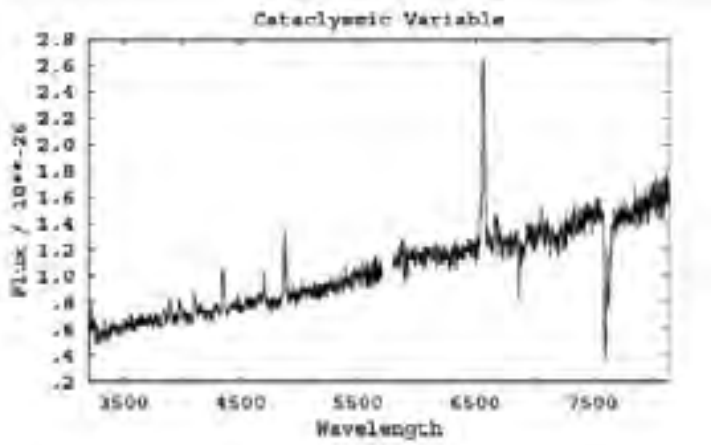


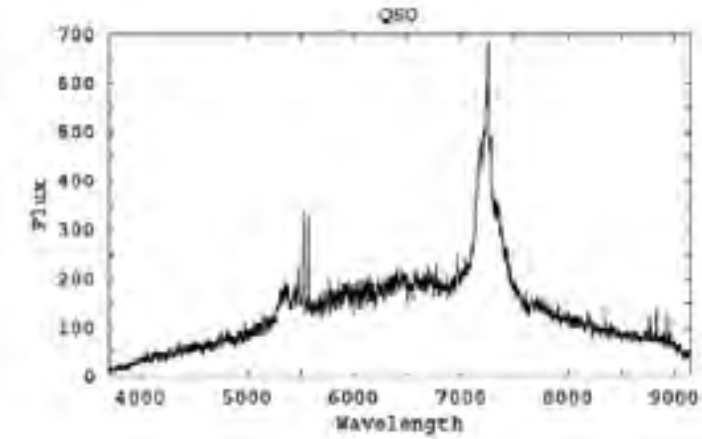
The IPHAS colour-colour diagram

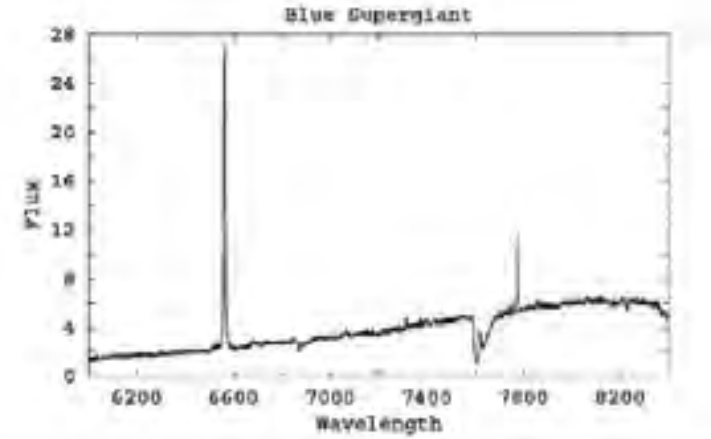


Spectroscopic follow-up









The IPHAS collaboration (P.I. Janet Drew, UK)

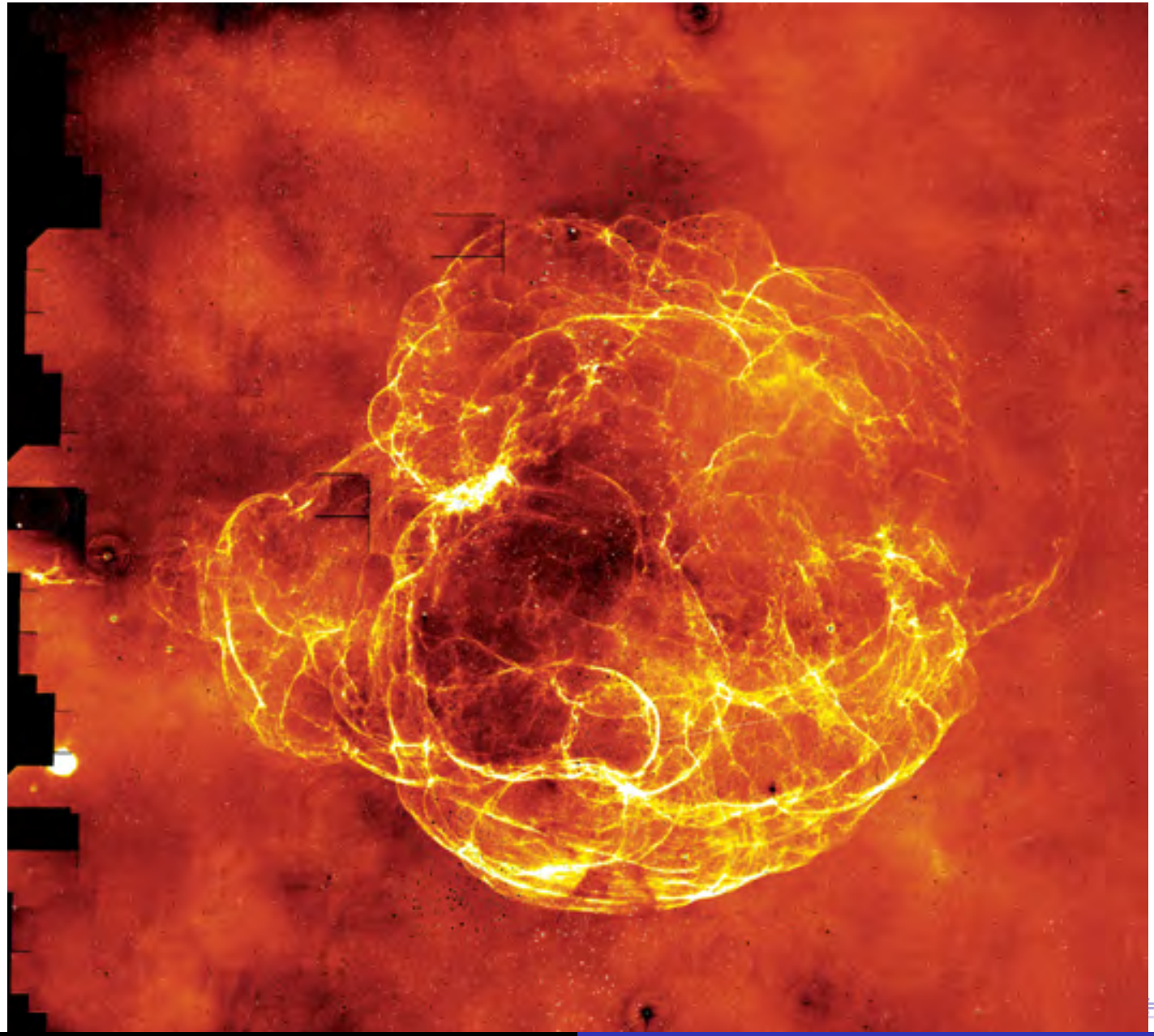
(alphabetically, by institution)
Armagh Observatory, Northern Ireland: Jorick Vink
Bristol University: Steve Phillipps, Rhys Morris
Harvard-Smithsonian Center for Astrophysics (USA): Jeremy Drake, Danny Steeghs
Imperial College London: Yvonne Unruh
Institute of Astronomy (CASU), Cambridge: Mike Irwin, Nic Walton, Eduardo Gonzalez-Solares
Instituto de Astrofisica de Canarias (Spain) : Romano Corradi, Antonio Mampaso, Eduardo Martin, Pablo Rodriguez-Gil
Isaac Newton Group: Romano Corradi, Pablo Rodriguez-Gil, Ian Skillen
Macquarie University (Australia): Quentin Parker
Nijmegen University (Netherlands): Paul Groot, Luisa Morales-Rueda
Royal Observatory Edinburgh: Chris Evans
Southampton University: Christian Knigge
Space Telescope Science Institute (USA): Danny Lennon
Thueringer Landessternwarte (Germany): Jochen Eisloeffel, Bringfried S tecklum
Universidad de Granada (Spain): Almudena Zurita
Universidad de Valencia (Spain): Juan Fabregat
University College London: Mike Barlow
University of Columbia (USA): Jeno Sokoloski
University of Hertfordshire: Janet Drew, Ralf Napiwotzki
University of Manchester: Albert Zijlstra
Warwick University: Boris Gaensicke, Danny Steeghs

IPHAS public science products

- Initial Data Release (González-Solares et al. 2008, MNRAS 388, 89)
  - Contains all data obtained up to the beginning of 2006
  - Photometric catalogue of ∼200 million objects, with associated image data
  - Access through traditional web server and Astrogrid VO Desktop
- Catalogue of emission line objects (Witham et al. 2008, MNRAS 384, 1277)
  - Preliminary catalogue listing photometry for nearly 5000 emision line objects
- Final data release with uniform photometric calibration expected in 2013.

IPHAS images: Rosette nebula

IPHAS images: s147



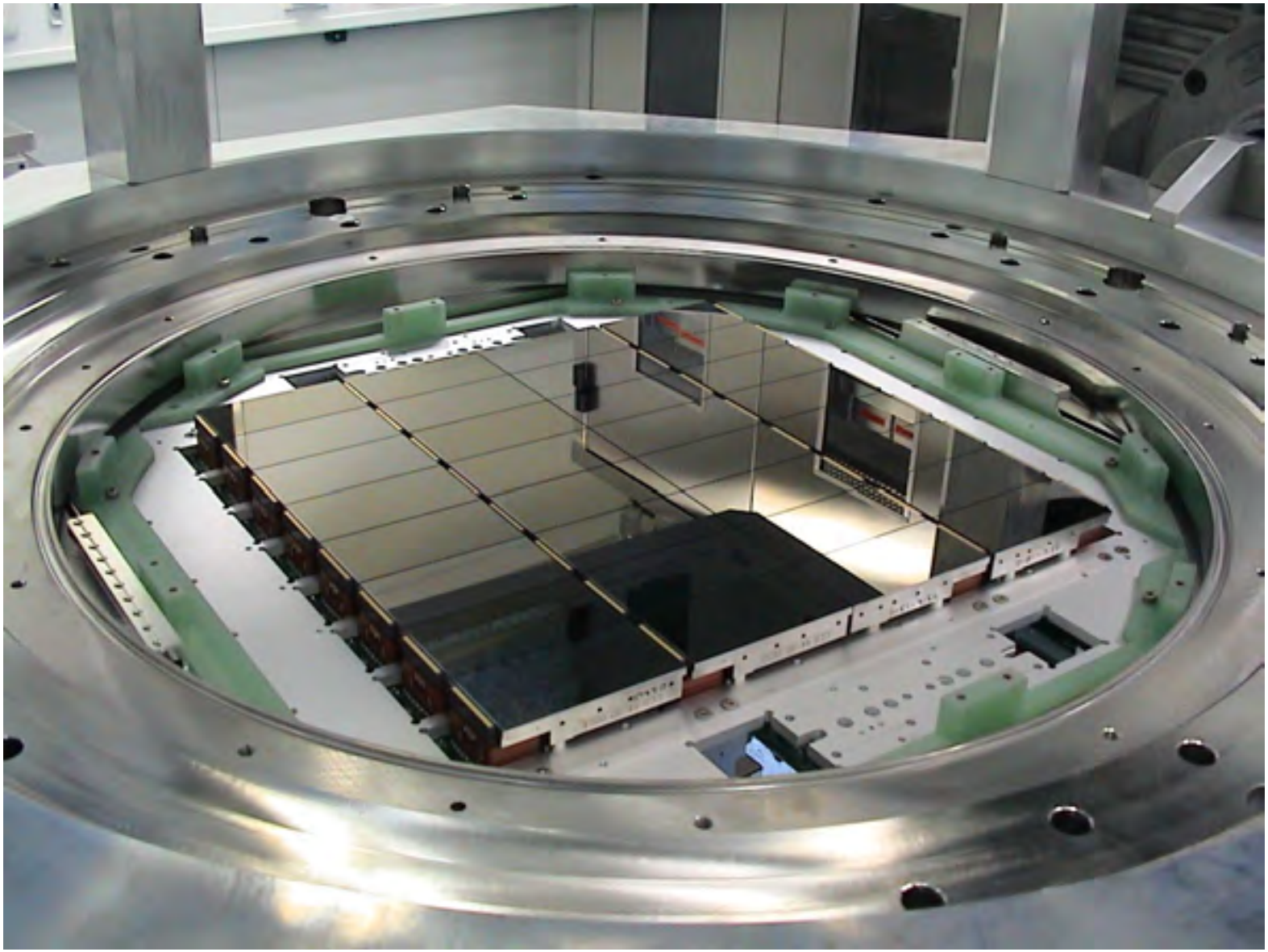
The VPHAS+ photometric survey

VPHAS: The VST/OmegaCam Photometric Hα Survey of the Southern Galactic Plane

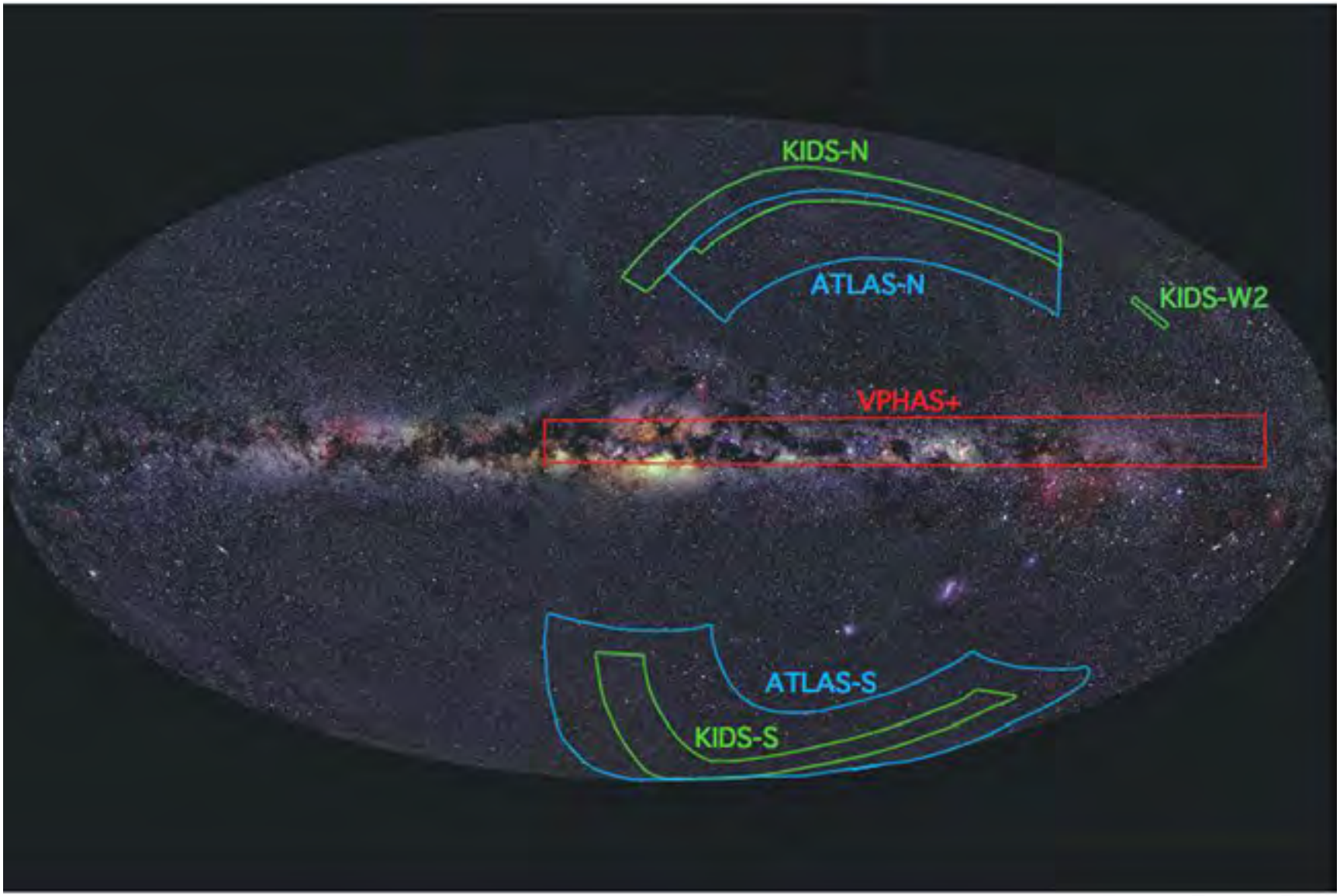
- Selected as ESO Public Survey
- Photometric survey in Hα, u', g', r' and i' filters
- Extended to the southern galactic plane, $5 > b > -5$ (1800 sq. deg.)
- Magnitude range 13 < r' < 21
- Observations started in 2012

IPHAS home: http://www.vphasplus.org

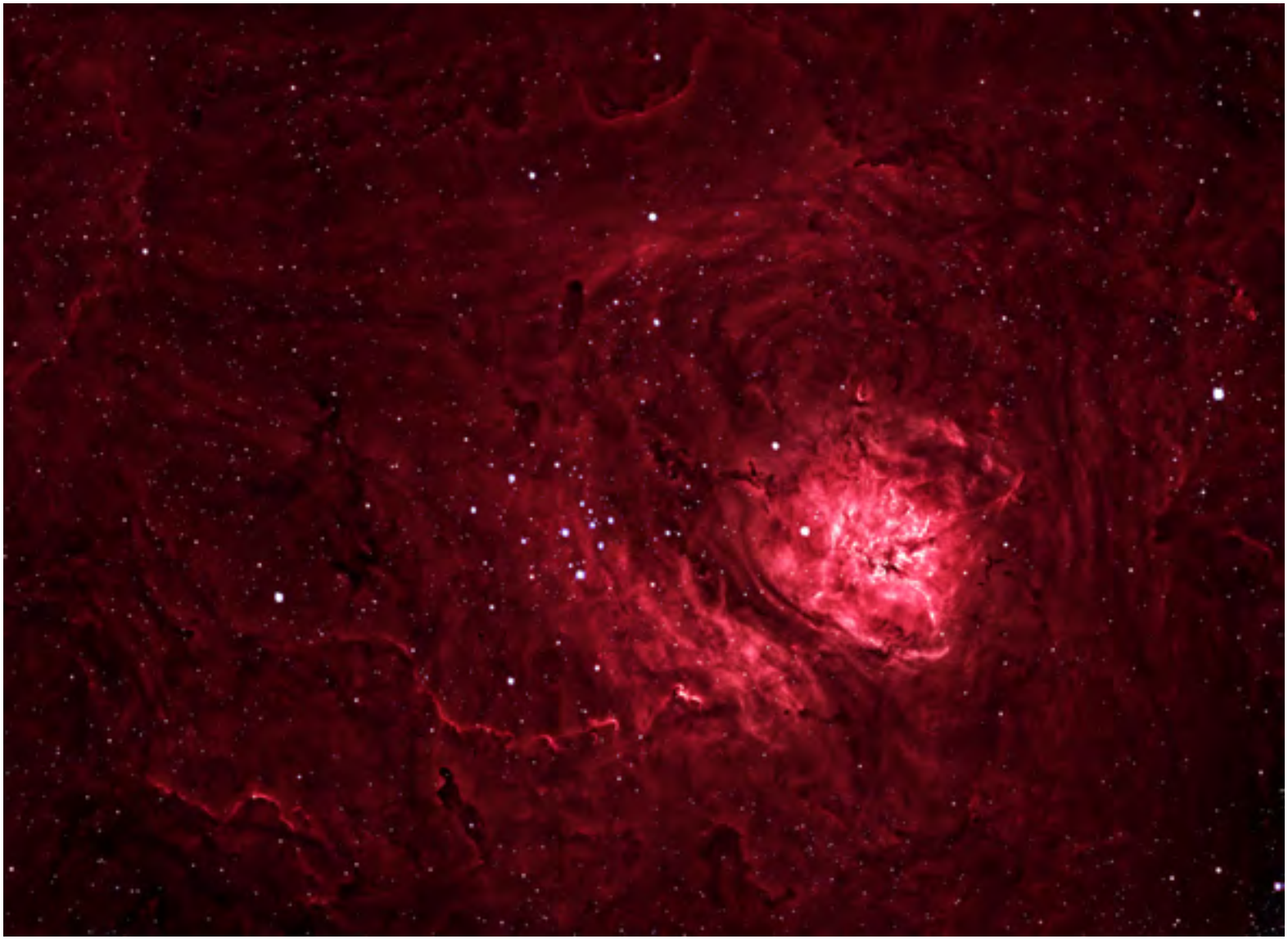
OmegaCam



VST Public Surveys



VPHAS images: Lagoon nebula

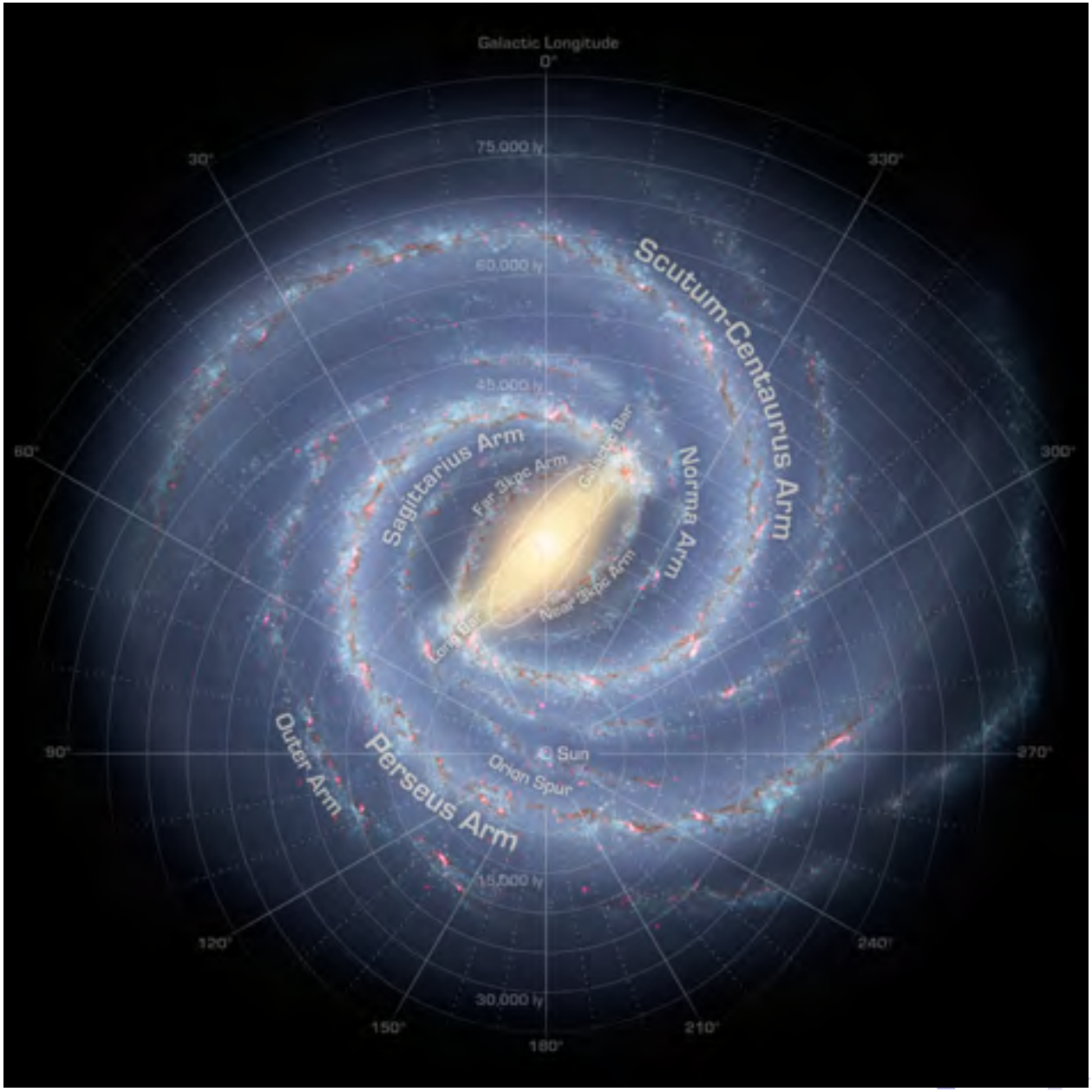


Potential for active B star research

- Most of the emission line objects detected by IPHAS are Be stars, as revealed by spectroscopic follow-up
- IPHAS will increase the number of known Be stars by several orders of magnitude
- The IPHAS limiting magnitude allows the observation of Be stars all over the Galaxy (except in regions of heavy interestellar absorption)
- With spectroscopic follow up and paralaxes Be stars can be used as tracers of the galactic structure

Be stars as galactic structure tracers

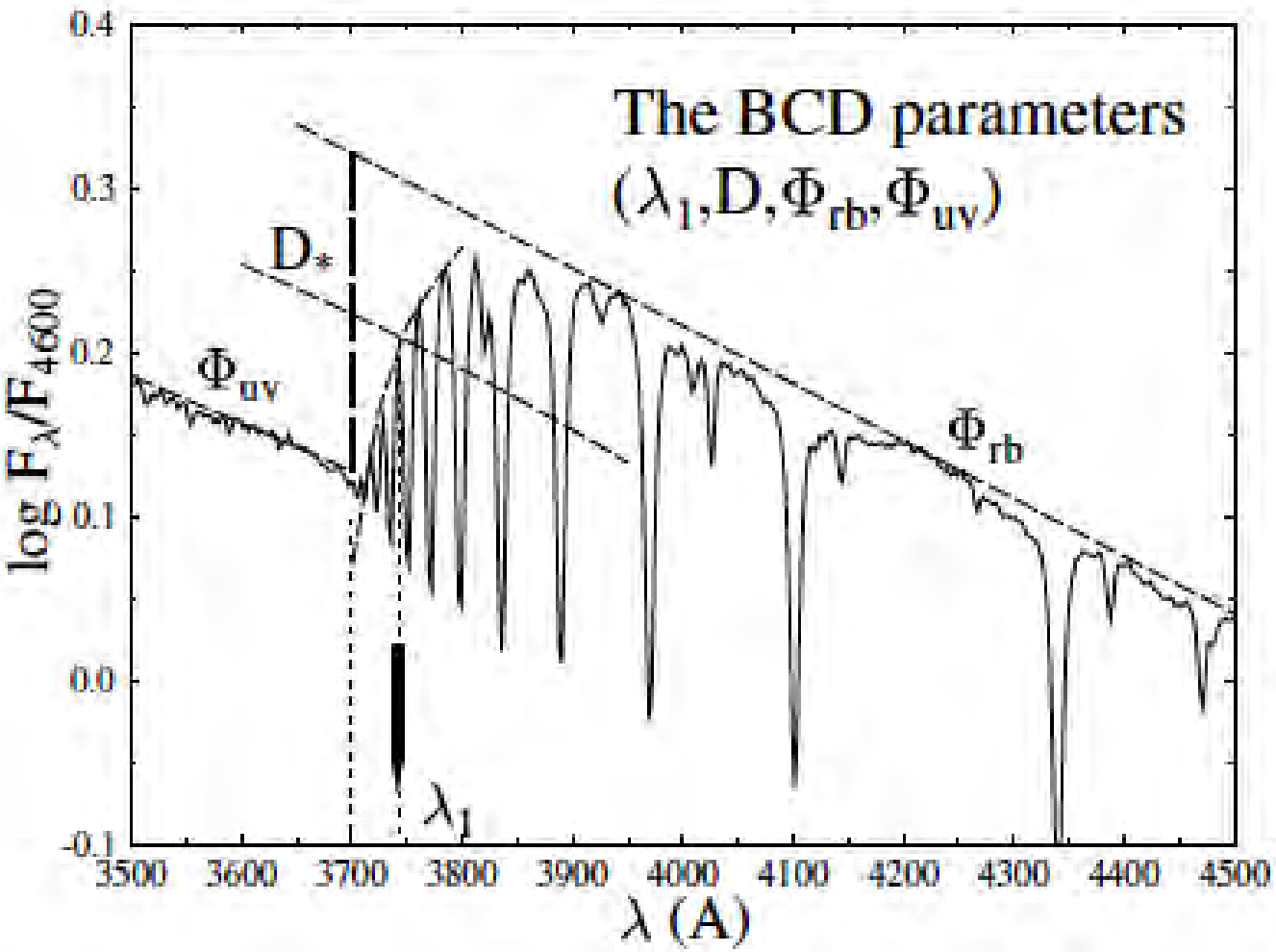
Be stars as galactic structure tracers



The BCD system

- Developed between 1930 and 1970 by Daniel Barbier, Daniel Chalonge and Lucienne Divan at the IAP, Paris (Barbier & Chalonge 1941, AnAp 4, 30; Chalonge & Divan 1952, AnAp 15, 201; 1973, A&A 23, 69; 1977, A&A 55, 117; Cidale et al 2001, A&A 368, 160; Zorec et al. 2009, A&A 501, 297)
- Bi-dimensional classification schema based on the measure of the Balmer discontinuity
  - D is a measure of the Balmer jump depth. T_{eff} indicator
  - λ_1 is a measure of the mean Balmer jump position. Luminosity indicator
- Currently in use by groups at the IAP and La Plata

The BCD system



The BCD system