# Curriculum vitae et studiorum
## Dr. Stefano Berta
*Updated: November 21st, 2018*

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| **First–Name:** | Stefano |
| **Family Name:** | Berta |
| **Place of birth:** | Genova (Italy) |
| **Year of birth:** | 1975 |
| **Nationality:** | Italian |

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| **Highest Degree:** | PhD Astronomer |
| **Languages**: | Italian<br>English<br>German<br>French |
| **Experience**: | Scientific research<br>Programming and software testing<br>Lead of small teams<br>Preparation of papers and reports<br>Referee for scientific journals<br>Talks and presentations at conferences<br>University courses for undergraduates<br>Master-theses supervisor<br>Guide at museum exhibitions |

## Education and Carrer Path:

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| 09/2018– –now | **Astronomer** at Institut de Radioastronomie Millimétrique (IRAM), Grenoble, working for data reduction and communication for the NIKA2 instrument, and extragalactic surveys. |
| 05/2016– –08/2018 | Sabbatical and parental time; development of new projects; 3-component SED fitting code; visitor scientist at the Physics Department, Zagreb University. |
| 09/2007– –04/2016 | **Scientist** position and Post Doctoral fellowship at Max Planck Institut für Extraterrestrische Physik, analysing *Herschel* data of extragalactic surveys. |
| 2006 | **Post-Doctoral** Scholarship at the Center for Astrophysics and Space Sciences (CASS), UCSD; supervisors Prof. H. E. Smith and Dr. C. J. Lonsdale. |
| 01/07/2005– –30/06/2007 | **Post Doctoral** fellowship at Padova Astronomy Department. Research project on "Multiwavelength study of Spitzer/SWIRE faint galaxies". |
| 18/03/2005 | **PhD degree in Astronomy**, Padova University. title of PhD thesis: "Multiwavelength analyses of faint infrared galaxies". Supervisors Prof. A. Franceschini and Dr. C.J. Lonsdale (IPAC). |
| 29/06/2001 | **Graduate degree in Astronomy**, Padova University (Italy). Title of Thesis: "Spectroscopic study of star forming galaxies in the *Hubble Deep Fields*"; supervisor Prof. A. Franceschini; full mark: 110/110 |

## Skills

**Operating systems**: UNIX, Linux, Windows.
**Programming languages**: Fortran, Super Mongo, Awk & Shell.
**Word processing**: Latex, Microsoft Word/Excel/PowerPoint, HTML.

**Astronomical Data reduction & analysis packages:** IRAF, ECLIPSE, SExtractor, Starfinder, EAZY, Hyper-z, MAGPHYS, custom codes, etc.;

**Languages**: Italian (mother tongue)
English (fluent)
German (good)
French (basic)

## Professional Skills and Achievements

I have gained experience at using large telescopes (4-, 8-, 10-meter class) for imaging and spectroscopic observations (optical and near-IR): ISAAC/VLT; SOFI/NTT; COSMIC/Palomar; LRIS/Keck; LUCI/LBT; MODS/LBT.

3-4 international conferences per year, including oral presentations to audiences of up to 500 people.

Co-author of 153 refereed publications (12 as first author), with more than 8900 citations and a $h$ index of 53.

Referee for major professional astronomical journals: *Nature*; *Astronomy & Astrophysics*; *Monthly Notices of the Royal Astronomical Society*; *Astrophysical Journal*.

Advisor for Cosmology at ESO Observing Panel (2012 – 2013)

Teacher of "Laboratory of Image Processing" course for 2nd and 3rd year undergraduates at the Padova Astronomical Department (2004 – 2007)

Co-supervisor of different astronomy Master Theses at Padova University.

## Other working experiences

Tour guide at the historical Astronomical Observatory of Padua (1999 – 2002).

Tour guide during the exhibition "Mostra sulla Luna" (Moon Exhibition) held in Padova (1999).

Translator, Interpreter

Poll clerk

Flyering

## Main Roles in Astronomy Research

**09/2018 – – now** **Institut de Radioastronomie Millimétrique** mainly working on NIKA2 data

- understanding of data structure and content;
- testing and optimization of data reduction;
- extragalactic surveys with NIKA2 and NOEMA;
- communication of NIKA2 performance and results;
- SED fitting;
- ancillary datasets.

**09/2007 – – 04/2016** **Max Planck Inst. f. Extraterrestrische Physik**, Infrared Group (lead by Prof. R. Genzel), working on far-infrared projects by the *PACS Evolutionary Probe* survey (PEP).

- Analysis of far-infrared (100-500 $\mu$m) images from the Herschel Space Telescope;
- source extraction from far-infrared images, using different techniques (aperture, PSF-fitting); characterization of completeness; multi-wavelength match; catalogs-building;
- coordination of the source extraction group of the PEP survey;
- statistical analysis of far-infrared catalogs; number counts; cosmic infrared background (CIB);
- building multi-wavelength catalogs (from the ultraviolet to the far-infrared), using the PSF-matching technique and a multi-wavelength ladder matching;
- analysis of SEDs of galaxies, from the UV to the far-IR, through modelling of stellar and dust emission; derivation of gas masses; gas cosmic volume density;
- study of photometric redshifts
- development of a custom code to reproduce the SEDs of galaxies with stellar, dust and AGN (active galactic nuclei) emission, using likelihood and Monte Carlo techniques;
- preparation of IR observations with 8m class telescopes;
- observations of (distant) galaxies with the VLT and the LBT telescopes.

**2006** **Center for Astrophysics and Space Science (CASS), University of California San Diego (UCSD)**, in the Group of Dr. C. Lonsdale and Prof. H. Smith, working on the *Spitzer Wide-area Infrared Extragalactic Survey*.

- analysis of infrared (3-24 $\mu$m) images from the

Spitzer Satellite; source extraction and characterization;
- SED fitting with custom codes;
- statistical analysis of large samples of galaxies;
- reduction and analysis of optical spectra of galaxies;
- preparation of spectroscopic observations of galaxies with large telescopes (5-10m class);
- observations (optical and near-infrared spectroscopy) of distant galaxies with the Palomar/COSMIC and the Keck/LRIS telescopes/instruments.

**2002 – 2007 Padova Astronomy Department and Astronomical Observatory**, in the Group of Prof. A. Franceschini, *studying the properties of infrared galaxies near and far.*

- Reduction of optical and near-infrared spectroscopic data of local and distant star forming galaxies, both single-slit and multi-slit;
- Reduction of optical imaging data, including wide field mosaics obtained with different instruments;
- source extraction from reduced images and creation of catalogs;
- use of software to model the spectral energy distributions (SEDs) and the spectra of galaxies to derive photometric redshifts, stellar masses, star formation rates and other physical parameters, using different approaches (e.g. stellar population synthesis or template models; Bayesian or Adaptive Simulated Annealing algorithms);
- using statistical methods to study the completeness of samples and compute the volume density of their physical parameters;
- development of algorithms and custom codes to perform SED fitting and statistical analyses;
- preparation of spectroscopic observations of galaxies with large telescopes (4-8m class);
- observations (optical and near-infrared spectroscopy and imaging) of distant galaxies with the NTT and VLT telescopes.