



# Curriculum Vitae et Studiorum

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## Claudia Travaglio

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### Personal and family status:

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Born: Turin (Italy), January 20<sup>th</sup>, 1970

Nationality: Italian

Status: Married, three children

### Position held:

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2006- present **Head of the Stellar Evolution Group** (nucleosynthesis and chemical evolution) at INAF-Turin

2009- present **President** of B2FH non-profit Research Association<sup>1</sup>

2001- present **Researcher** (permanent position) at INAF-Astrophysical Observatory Turin

### Education:

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2000 **PhD** in Astronomy, University of Florence (Italy),  
Thesis title: *Galactic Chemical Evolution of Heavy Elements*  
Supervisors : Dr. D. Galli, Prof. F. Pacini

1995 **Degree** in Physics, University of Turin, Physics Department (score : 110/110)  
Title: *Astrophysical Interpretation of Isotopic Anomalies in Interstellar Graphite Grains*  
Supervisor: Prof. R. Gallino

### Fellowship and awards:

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2001-2003 **Visitor fellowship** at MPA-Munich (Germany). Ref. Prof. W. Hillebrandt

2001 **Premio Gratton Award** for the best Italian PhD thesis in Astronomy (1999-2001)

2000-2001 **Postdoc fellowship** MPIA-Heidelberg (Germany). Advisor : Dr. A. Burkert

1995 **Fellowship** at Astronomical Observatory Turin (Italy). Advisor : Prof. M. Busso

### Teaching activities and supervision of students

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I summarize my teaching experiences over the years:

**1994-1996** Teaching Assistant, Physics Department, University of Turin  
(Mechanics, Kinematics, Thermodynamics, Optical physics)

**2004-2005** Teaching Assistant, Physics Department, University of Turin  
(High Energy Astrophysics)

**2011-2012** Lecturer in Astrophysics, University of Turin  
(Stellar Physics and Nuclear Astrophysics)

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<sup>1</sup> **B2FH Association ([www.b2fh.org](http://www.b2fh.org))**

*Non-profit Professional Research Association for Nuclear Astrophysics.*

The name B2FH is in the honour of the milestone work published in 1957 by Geoffrey and Margaret Burbidge, William Fowler and Fred Hoyle on synthesis of the element in stars. B2FH was founded in May 2009 by myself, together with Italian astronomers and physicists, actively working in Nuclear Astrophysics, in order to support and develop Italian research in this field.

I wish to state that in my Institute (where I have had a permanent position since June 2001) teaching is not seen as a priority and in Turin the interaction with the University is very weak. Therefore, despite my great enthusiasm, I never had really a solid opportunity to experience many teaching programs. I know that this point can represent a lacking in my growth within science and leadership. I fully believe that gaining teaching experience is essential for future academics and for teaching future leaders and outside Academia.

I have supervised and co-supervised the different undergraduate, PhD students, and postdocs through the University of Turin and the Ludwig Maximilian University Munich. These include:

#### Master Students

*Marius Gieseler* (2001, 'Type Ia supernova nucleosynthesis'), *Alessandra Serminato* (2008, 'Galactic chemical evolution of heavy elements'. Now staff researcher at Thales Alenia, Turin), *Umberto Battino* (2011, 'Nucleosynthesis in multi-D Type Ia supernovae'), *Serena Rago* (2013, 'Chemical evolution in dwarf spheroidal galaxies'), *Luigi Antonio Squillante* (2016, 'Nucleosynthesis in multi-D Type II supernovae').

#### PhD Students

*Dr. Marius Gieseler* (2001-2004, co-supervised, PhD at Max-Planck Institute fuer Astrophysik, Munich, Germany, supervisor Prof. W. Hillebrandt), *Dr. Sara Bisterzo* (2004-2007, co-supervised, PhD at University of Turin, supervisor Prof. R. Gallino. Now postdoc at INAF-Turin, supervisor myself), *Dr. Umberto Battino* (2012-2015, co-supervised, PhD at Basel University, supervisor Prof. F. Thielemann. Now postdoc at Keele University, UK).

#### Postdoc

*Dr. Sara Bisterzo* (2015-2016, 'The role of massive stars in Galactic chemical evolution', supervisor Dr. C. Travaglio).

#### Short term visitors

*Dr. Sergio Cristallo* (Researcher at INAF-Teramo, Italy, visitor in INAF-Turin in 2012, 6 months. Financed by B2FH Association. Collaboration on nuclear reactions at explosive conditions).

#### Organization of scientific meetings:

2017	<b>Co-organizer</b> , Session on 'Stellar nucleosynthesis, galactic chemical evolution, and presolar grains', Goldschmidt meeting, Paris 2017, August 13-18
2015	<b>SOC Member</b> , 'p-process workshop', Cyprus
2012	<b>SOC Member</b> , 12th International Symposium on Nuclei in the Cosmos, Cairns, Australia
2004	<b>SOC Member, LOC Member and Chair</b> , 'Chemical abundances and Mixing in Stars in the Milky Way and its Satellites', ESO Astrophysics Symposia, Castiglion della Pescaia, Tuscany, Italy

#### Peer review:

Referee for the following journals: *Astrophysical Journal*, *Astronomy & Astrophysics*, *Monthly Notices of Royal Astronomical Society*, *Physics Review C*.

#### Institutional responsibilities:

2006- present	<b>Head of the Stellar Evolution Group</b> (nucleosynthesis and chemical evolution) at INAF-Turin
2014- present	<b>Scientific Panel Member</b> , for the DECI-PRACE proposal for HPC computing resources
2003 -present	<b>University Postgraduate Committee Member</b> for Astrophysics

#### Commissions of trust:

2013- present	<b>Responsible for SNIa model calculations and chemical evolution projects</b> within the
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NuGrid international collaboration ([www.nugridstars.org](http://www.nugridstars.org)).

- 2014- present **Collaborator in a NASA Project** on Isotopic relationships between terrestrial planets and meteorites (PI: Prof. N. Dauphas)  
2009- present **President** of the B2FH Research Association

#### *Membership of scientific societies:*

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- 2014 - present **Associate Member** of the Experimental Astrophysics group at Goethe University Frankfurt, Germany  
2015 - present **Associate Member** of INFN, Istituto Nazionale di Fisica Nucleare, Italy  
2006 - present **Associate Member** of SAIT, Societa' Astronomica Italiana, Italy

#### *Observational/experimental experiences:*

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- 2016** **Co-PI** (together with Prof. A. Laird, University of York, UK), EMMA spectrometer (at ISAC-II TRIUMF). Title: 'Direct Measurements of the  $^{78}\text{Kr}(p,\gamma)^{79}\text{Rb}$  and  $^{79}\text{Br}(p,\gamma)^{80}\text{Kr}$  Reactions'. The experiment is scheduled for summer 2017.  
**2014** **Co-PI** (together with Prof. A. Banu), HIGS2 facility. Title: 'Cross-section measurements of the key photonuclear reaction –  $^{94}\text{Mo}(\gamma,n)^{93}\text{Mo}$  – for understanding the origin of p-nuclei'. *The measurement has been done in June 2014 at HIGS2 facility. Data are under analysis.*  
**2002** **PI**, using the SARG spectrograph, 3.5mt telescope TNG, La Palma, Spain (May 2002)  
**2001** **PI**, using the FEROS spectrograph, 1.5mt telescope, La Silla, Chile (October 2001)  
**2001** **PI**, using the FEROS spectrograph, 1.5mt telescope, La Silla, Chile (January 2001)

#### *Funded projects:*

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- 2011-2013 **PRIN-MIUR**, 'The Physics of Low and Intermediate Mass Stars Revisited. (Structure, Magneto-hydrodynamics, Nucleosynthesis and Contributions to the Nuclear Evolution of Galaxies)'  
PI: Prof. C. Spitaleri (University of Catania)  
2009-2011 **PRIN INAF**, 'Supernova variety and Nucleosynthesis Yields',  
PI.: Dr. S. Benetti (INAF- Padua Observatory)  
2001-2006 **European Research Training Network**, 'The Physics of Type Ia Supernova Explosions',  
PI.: Prof. W. Hillebrandt (MPA-Munich)

#### *Major collaborations:*

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- 2009- present** I am a member of and active contributor to the **NUGRID collaboration** (a collaboration started in 2007, and now including 21 Institutes around the world: *Keele University, UK; University of Victoria, Canada; Basel University, Switzerland; ANU, Australia; Los Alamos National Laboratory, NM, USA; INAF-Astrophysical Observatory Turin; Arizona State University; Universtaet Frankfurt/GSI, Germany; TRIUMF, Canada; Notre Dame, USA; Monash University, Melbourne, Australia; Chicago/Argonnem USA; Louisiana State Universtiy USA; Michigan State University, USA; University of York, UK; Oak Ridge National Laboratory/University of Tennessee, USA; The University of Alabama, USA; SUNY Stony Brook, USA; Konkoly Observatory of the Hungarian Academy of Sciences, Hungary; TU Munich, Germany; Heidelberg Institute for Theoretical Studie.*  
The collaboration is to develop pipelines between stellar evolution codes and Multi-zone, Post-Processing Network code, that uses MPI for parallelism (called MPPNP) in order to efficiently deliver the largest impact studies for key reaction rates, and now extended to a variety of collaboration tools.  
**2002- present** **Prof. F. Roepke**: Heidelberg Institute for Theoretical Studies (Heidelberg, Germany)  
Collaboration on: Nucleosynthesis and Type Ia supernovae

- 2009- present Dr. I. Seitenzahl:** ANU College of Physical and Mathematical Science (Canberra, Australia)  
Collaboration on: Nucleosynthesis and Type Ia supernovae
- 2001- present Prof. H.-T. Janka:** Max-Planck-Institut für Astrophysik (Munich, Germany)  
Collaboration on: Nucleosynthesis and Type II supernovae
- 2005- present Prof. R. Reifarth:** Chair of Physics Department Goethe University Frankfurt (Germany)  
Collaboration on: Nuclear reactions during explosive nucleosynthesis
- 2012- present Prof. A. Davis:** Chair of Department of Geophysical Science, University of Chicago (USA)  
Collaboration on: Interstellar grains as tracers of nucleosynthesis in supernovae

#### *Invited Talks/Conferences (Selection only):*

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*In the last years, I have been invited to presentations/seminars at International Conferences, Workshops and leading institutions at least couple of times/year. A recent selection is given below:*

- 2016 “NUEX: how Nucleosynthesis can constrain Explosions”, MPA Munich, Germany (Invited seminar)
- 2016 “Compact objects, their equation of state and their nucleosynthesis”, Basel, Switzerland
- 2016 “Electron capture supernovae”, Monash University, Australia
- 2015 “Nuclear Physics in Astrophysics VII”, York, UK
- 2015 “p-process workshop”, Cyprus (member of SOC)
- 2015 “Galactic evolution, Nuclear Astrophysics, Stellar Hydrodynamics”, Victoria, Canada
- 2015 “Nucleosynthesis in supernovae”, Astrophysics Research Institute at Liverpool John Moores University, UK (Invited seminar)
- 2015 “Nucleosynthesis away from stability”, University of Frankfurt, Germany
- 2014 “Nuclei in the Cosmos XIV”, Debrecen, Hungary
- 2014 “Nucleosynthesis and chemical evolution”, Institute for Nuclear Theory Seattle, USA
- 2014 “p-process in SNIa”, Basel, ref. Prof. F.K. Thielemann (Invited seminar)
- 2013 “Open problems in heavy elements nucleosynthesis”, Debrecen, Hungary
- 2013 “Nuclear Physics in Astrophysics VI”, Lisbon, Portugal
- 2012 “Nuclear Astrophysics School”, Russbach, Austria
- 2012 “Nuclei in the Cosmos XIII”, Cairns, Australia (August 2012, SOC member)

#### *Outreach Activities:*

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Through B2FH Association I developed many **dissemination initiatives directed at the general public**: open seminars, events with special guests (Professors from important foreign institutions), translation in Italian and bound in a book of the autobiography of Burbidge G., Burbidge M., Fowler W., and Hoyle F. (the B2FH team) together with the dissertation of W. Foyler when he was honored of the Nobel Prize, observational nights for general public at Astrophysical Observatory Turin, crowdfunding campaign to support a really good postdoc we had in Turin.

Thanks to donations from sponsors (private and companies), the Association was also able to increase the hardware facilities, essential to reach the best efficiency in the theoretical studies of nucleosynthesis performed by the associated researchers (included myself, as B2FH President).

#### *Career breaks:*

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- Nov. 2006-May 2007 **Maternity leave**, first child
- Aug. 2008-Feb.2009 **Maternity leave**, second child
- July 2012-Jan. 2013 **Maternity leave**, third child