

# ENRICO VIRGILLI

## CURRICULUM VITAE ET STUDIORUM

### PERSONAL INFORMATION

*Date of Birth:* 7 May 1977  
*Citizenship:* Italian  
*Birthplace:* Ferrara  
*email:* virgilli@fe.infn.it  
enricovirgilli@gmail.com  
*phone:* +39 974366 - office  
+39 333 6405036 - mobile



### LANGUAGES

Italian - native language  
English - intermediate (speaking, listening, reading, writing)  
French - basic (reading, listening)

### RESEARCH INTEREST AND ACTIVITIES

- 1 High energy Astrophysics data analysis of X-/ $\gamma$ -ray sources:
  - Multi-mission spectral analysis of data from INTEGRAL, RXTE, BeppoSAX missions;
  - Temporal analysis of data from RXTE and BeppoSAX missions.
- 2 Instrumentation and technology for high energy Astrophysics:
  - X-/ $\gamma$ -ray focusing techniques;
  - Calibration team member of the LARIX facility;
  - Study and characterization of crystals using diffraction techniques.
- 3 Author and manager of the website of the LARIX A and LARIX T facilities [www.larix.unife.it](http://www.larix.unife.it).

## PATENTS

March 2016      Hard X-ray TELEscope (HAXTEL) co-inventor - Patent pending  
*A method for building Laue lenses for middle and short focal length ( $< 10$  m).*

## EDUCATION AND TRAINING

20/07/2015 -  
29/02/2016      **Training qualification for Expert in Radiation Protection - level II**  
Knowledge and use of X-ray generators in the 400 keV - 10 MeV energy range. Knowledge and use of radioisotopes, neutron sources up to  $10^4$  neutrons/s. Approved by the Head of the University of Ferrara.  
**Supervisor:** Dott.ssa Alessandra BOSCHI, II level Qualified Expert in Radiation Protection of the University of Ferrara

15/12/2014 -  
10/07/2015      **Training qualification for Expert in Radiation Protection - level I**  
Knowledge and use of X-ray sources and X-ray generators up to 400 kV. Knowledge of protection principles and rules in ionizing radiation environments. Approved by the Head of the University of Ferrara.  
**Supervisor:** Dott.ssa Alessandra BOSCHI, II level Qualified Expert in Radiation Protection of the University of Ferrara

Oct. 2005 - April  
2008      **PhD in Physics - University of Ferrara**  
**Thesis Title:** Simultaneous spectral and temporal properties of Galactic X-ray Binaries.  
Summary: Three sources were analyzed in terms of spectral and temporal variability. The Z-sources GX 340+0 has been studied using the bulk motion comptonization models BMC and COMPTB, in comparison with the classical description with thermal comptonization (COMPTT) or phenomenological models (PL). The black hole candidate 4U 1630-47 as been also studied in terms of bulk and thermal comptonization models, and on the basis of the relation between temporal and spectral parameters, an estimated mass has been obtained, by using the scaling method (Titarchuk et al. 2009). The same method has also been applied to the still unknown source Cyg X-3 and the results seems to be in favor of presence of a central black hole.  
**Advisors:** Proff. F. Frontera and L. Titarchuk.  
**External Committee Members:** Proff. Z. Berezhiani, M. Vietri, L. Burderi, T. Di Salvo  
**Evaluation:** Excellent.

28/10/2004      **Degree in Physics - University of Ferrara**  
**Thesis Title:** La natura delle binarie X di piccola massa ad alta luminosità: il caso di GX 3+1 osservata con INTEGRAL.  
Summary: The Thesis explored the behavior of the galactic low mass x-ray binary source GX 3+1 in terms of spectral variability. I have studied its spectral behavior during two different epochs and found evidence of hard tail in a sub-set of observations. Furthermore, the Color-Color Diagram (CD) resembled that of Z-sources, suggesting that bright Atoll sources represents an intermediate class between the classical Atoll and the Z class.  
**Advisors:** Prof. F. Frontera & Dott. R. Farinelli.  
**Score:** 106/110.

## WORKING ACTIVITY AND MEMBERSHIPS

- 01/01/2017 **Fixed Term Researcher contract RTD**  
Sviluppo di Lenti Laue per raggi gamma per applicazioni di astrofisica delle alte energie.  
Reference UniFE: Prof. Piero ROSATI, rosati@fe.infn.it
- 01/03/2016 - oggi **Postdoctoral fellow**  
Laue lenses development for Gamma-rays astrophysics and other possible applications.  
Reference UniFE: Prof. Piero ROSATI rosati@fe.infn.it
- 04/2016 **Member of the AHEAD project**  
The Integrated Activities in the High Energy Astrophysics Domain consortium is an ongoing project approved in the framework of the European Horizon 2020 program (Research Infrastructures for High Energy Astrophysics).  
Reference for UniFE: Prof. Piero ROSATI rosati@fe.infn.it  
National coordinator Dott. Luigi PIRO luigi.piro@iaps.inaf.it
- 10/2015 **HXMT mission calibration team member**  
Responsible for the calibration activities for the Chinese HE/HXMT instrument at the LARIX A facility.  
Responsible of the ground calibration of HE/HXMT:  
Dr. Li Xufang (Institute of High Energy Physics (IHEP) - Beijing.  
UniFE Coordinator: Prof. F. Frontera frontera@fe.infn.it  
UniFE Coordinator: Prof. P. Rosati rosati@fe.infn.it  
Scientific Coordinator: Dr. J.B. Stephen stephen@iasfbo.inaf.it
- 01/03/2015 - 29/02/2016 **Postdoctoral fellow**  
Laue lenses development for Gamma-rays astrophysics and other possible applications.  
Reference UniFE: Prof. Piero ROSATI, rosati@fe.infn.it
- 01/03/2014 - 28/02/2015 **Postdoctoral fellow**  
Laue lenses development for Gamma-rays astrophysics and other possible applications.  
Reference UniFE: Prof. Piero ROSATI, rosati@fe.infn.it
- 06/2014 **INAF/IASF Association**  
Collaboration with the staff of IASF/INAF for Monte Carlo simulations of X-/gamma-focusing optics.  
Reference at INAF/IASF:  
Dott. Ezio CAROLI, caroli@iasfbo.inaf.it  
Dott. John STEPHEN, stephen@iasfbo.inaf.it
- 06/2014 **INFN Association (Istituto Nazionale di Fisica Nucleare)**  
Section of Ferrara
- 06/2014 **Member of the LOGOS project (Laue Optics for Gamma-ray ObservationS)**  
Tests of crystals at the ID15 of the European Synchrotron Radiation Facility (ESRF).  
Reference:  
Dott. Andrea MAZZOLARI, mazzolari@fe.infn.it  
Prof. Vincenzo GUIDI, guidi@fe.infn.it

- 01/01/2013 -  
31/12/2013      **Postdoctoral fellow**  
Development of Laue lenses for Hard X-/Soft Gamma-rays for astrophysics applications.  
Reference UniFE: Prof. Lev TITARCHUK, titarchuk@fe.infn.it
- 2010-2013      **Member of the LAUE project team - University of Ferrara**  
The LAUE project, supported by ASI, is devoted to develop the technology for building Laue lenses for space applications. Primary contractor was DTM Technology - Modena.  
Project primary contractor (DTM Technology):  
    Ing. Ferdinando CASSESE, fcassese@dtm.it  
Scientific responsible UniFE:  
    Prof. Filippo FRONTERA, frontera@fe.infn.it
- 01/01/2012 -  
31/12/2012      **Postdoctoral fellow**  
Development of Laue lenses for Hard X-/Soft Gamma-rays for astrophysics applications.  
Reference UniFE: Prof. Filippo FRONTERA, frontera@fe.infn.it
- 01/01/2011 -  
31/12/2011      **Postdoctoral fellow**  
Development of Laue lenses and applications in Gamma-ray Astrophysics.  
Reference UniFE: Prof. Filippo FRONTERA, frontera@fe.infn.it
- 01/01/2010 -  
31/12/2010      **Postdoctoral fellow**  
Development of Laue lenses and applications in Gamma-ray Astrophysics.  
Reference UniFE: Prof. Filippo FRONTERA, frontera@fe.infn.it
- 2008-2010      **Member of the HAXTEL activity**  
Hard X-ray TELEscope (HAXTEL) project devoted to develop a technology for building a broad energy pass-band Laue lens instrument.  
Scientific Coordinator: Prof. F. FRONTERA, frontera@fe.infn.it  
Engineering Coordinator: Ing. V. CARASSITI, carassiti@fe.infn.it
- 01/08/2008 -  
31/07/2009      **Postdoctoral fellow**  
Development of Laue lenses and applications in Gamma-ray Astrophysics.  
Reference UniFE: Prof. F. FRONTERA, frontera@fe.infn.it

## TEACHING ACTIVITY

- 2009-2010      **Teaching assignment: Principles of Thermodynamics and applications.**  
Engineering Department - University of Ferrara
- 2008-2009      **Teaching assignment: Classical Mechanics and exercises.**  
Engineering Department - University of Ferrara

## SUPERVISOR OF GRAD AND PHD STUDENTS

- present* Assistant supervisor of Master Degree: **Jacopo Romano**  
Thesis title: *Caratterizzazione di cristalli e studio di fattibilità di un prototipo di lente di Laue*  
Dipartimento di Fisica - Università degli studi di Bologna
- Sept. 2016* Supervisor of Bachelor Degree: **Giovanni Volta**  
Thesis title: *Lenti di Laue per applicazioni astrofisiche. Ottimizzazione del campo di vista e studio della risoluzione angolare per sorgenti fuori asse.*  
Dipartimento di Fisica e scienze della Terra - Università degli studi di Ferrara
- March 2016* Supervisor of Bachelor Degree: **Sabrina Lorena Porini**  
Thesis title: *Procedure di allineamento della Facility larix T del laboratorio larix*  
Dipartimento di Fisica e scienze della Terra - Università degli studi di Ferrara
- March 2014* Supervisor of Bachelor Degree: **Filippo Nobili**  
Thesis title: *Lenti di Laue per raggi gamma: proprietà fisiche e sviluppi in corso nel laboratorio larix*  
Dipartimento di Fisica e scienze della Terra - Università degli studi di Ferrara
- 2010-2013:* Assistant supervisor of PhD Thesis: **Vincenzo Liccardo**  
Thesis title: *Gamma-ray lenses: Development and Test.*  
Dipartimento di Fisica e scienze della Terra - Università degli studi di Ferrara
- 2010-2013* Assistant supervisor of PhD Thesis: **Vineeth Valsan**  
Thesis title: *Extending the band of focusing X-ray telescopes beyond 100 keV: motivations and proposed solutions.*  
Dipartimento di Fisica e scienze della Terra - Università degli studi di Ferrara
- October 2010* Assistant supervisor of Bachelor Degree Thesis: **Christian Gulmini**  
Thesis title: *Studio osservativo dei processi di emissione nella sorgente binaria GX 340+0.*  
Dipartimento di Fisica e scienze della Terra - Università degli studi di Ferrara
- October 2005* Assistant supervisor of Master Degree Thesis: **Elisa Venier**  
Thesis title: *Identificazione con INTEGRAL di sorgenti serendipite viste con lo strumento PDS a bordo del satellite BeppoSAX.*  
Dipartimento di Fisica e scienze della Terra - Università degli studi di Ferrara

## PUBLIC LECTURES AND OUTREACH ACTIVITY

2014-2016 "Laboratori di Fisica Moderna"

Advisor for high school students attending lectures/stages in the laboratories to learn fundamental physics through experiments.

Reference: Dott. Federico SPIZZO, spizzo@fe.infn.it  
Dott. Paolo LENISA, lenisa@fe.infn.it

2015 "SperimentEstate 2015"

Teaching and advisor activity for high school students. In collaboration with CNR/INAF Bologna.

Reference: Dott.ssa Milena SCHIAVONE, schiavone@iasfbo.inaf.it  
Dott.ssa Natalia AURICCHIO, auricchio@iasfbo.inaf.it

2008-2013 Progetto Ministeriale "Lauree Scientifiche"

Senior advisor for students on behalf of the Experimental Astrophysics division of the Physics and Earth Science Department of the University of Ferrara.

2006-2016 "Porte Aperte a Fisica"

Mentor and Tutor for the Astrophysics laboratory during the public access to the laboratories of the Physics ad Earth Science Department.

## INFORMATIC SKILLS

*Windows* knowledge of the OS. General use of the WORKS package with use of Power-point, Word, Excel, Access. European Computer Driving License (ECDL).

*Linux and Mac OS* Use of the Linux/Unix based OS (Fedora, Red Hat, Mandriva, Ubuntu), system update/upgrading, s/w installation from source package or from binary pre-compiled code. Use of keynote, texmaker. Use of hard-disk partitioning tools.

*General Programming Languages* Practice with Monte Carlo codes with PYTHON, c, c++, PERL. Good expertise in Unix Bourne Again SHell (BASH), C shell. Frequent use of the markup language L<sup>A</sup>T<sub>E</sub>X. Basic employ of IDL (Research Systems).

*Website languages* Good knowledge and use of the HTML language. Basic knowledge of PHP and MySQL database management system for web development. Excellent use of the Content Management System (CMS) WORDPRESS.

*Graphics and image processing* Use of gnuplot for presenting plots and graphs. Good knowledge of the cross-platform image editors GIMP and photoshop.

*Scientific Data Analysis Packages* Good expertise with XRONOS and XSPEC, knowledge and use of the FITS file format, widely used in Astrophysics and of the FTOOLS developed for processing/analysis of FITS files.

*Other skills* Good knowledge of QDP, Root, labVIEW, Matlab.

## SCIENTIFIC SERVICES

- Referee for **Journal of Astrophysics and Astronomy (JOAA)**

17-19 September  
2013

**Co-organizer of conference (LOC)**  
Congresso Nazionale Oggetti Compatti CNOC VIII, Ferrara (Italy)  
[http://www.brera.inaf.it/~campana/cnoc8/CNOC\\_VIII/Welcome.html](http://www.brera.inaf.it/~campana/cnoc8/CNOC_VIII/Welcome.html)

14-16 September  
2011

**Co-organizer of conference (LOC)**  
X-ray Astrophysics up to 511 keV, Ferrara (Italy)  
<http://www.fe.infn.it/astrofe2011>

11-12 September  
2009

**Co-organizer of conference (LOC)**  
Black Holes in Binary Systems: Observations versus Theory, Ferrara (Italy)  
<http://www.fe.infn.it/astrofe2009>

## CONTRIBUTION TO NATIONAL AND INTERNATIONAL CONFERENCES

7-8/11/2016

**Workshop on Soft  $\gamma$ -ray Astronomical Telescopes - DTU - Copenhagen**  
"Laue lenses for soft Gamma-rays: general overview and recent developments".

2016

Invited Seminar: **European Synchrotron Radiation Facility ESRF - Grenoble**  
"Broad band Laue lenses (80 - 600 keV): from the first principles to a next generation of gamma-ray telescopes".

2015

Talk: **Marcel Grossmann Conference - Rome 12-18 July**  
"State-of-the-art of the hard x-/soft gamma-ray focusing telescopes: the LAUE project status".

2013

Talk: **SPIE Conference, San Diego - USA**  
The LAUE project and its main results.

2013

Invited talk: **Congresso Nazionale Oggetti Compatti CNOC VIII, Ferrara - Italy**  
Focusing instruments for hard X-ray photons.

2013

Talk: **XCIX Congresso Nazionale Società Italiana di Fisica, Trieste - Italy**  
Broad band Laue lenses for gamma rays (80 - 600 keV): experimental results.

2012

Talk: **Medical applications for Laue lenses – Bioindustry park, Ivrea - Italy**  
New imaging technique for nuclear diagnostic medicine and radiotherapy.

2012

Talk: **XCVIII Congresso Nazionale SIF, Napoli - Italy**  
Laue lenses for soft gamma-ray astronomy and other applications: development status and first results.

2012

Invited talk: **International Workshop on Astronomical X-ray Optics, Prague - Czech Republic**

The LAUE project: a lens for hard X and soft Gamma rays.

- 2012      **Talk: SPIE Conference, Amsterdam - The Netherlands**  
Development status of the LAUE project.
- 2011      **Talk: 3<sup>rd</sup> Galileo-Xu Guang qi Meeting, Beijing - China**  
Laue lens development for high energy astrophysics: status and prospects.
- 2011      **Talk: SPIE Conference - San Diego - USA**  
The LAUE project: a broad band gamma-ray focusing lens.
- 2011      **Talk: Congresso Nazionale Oggetti Compatti CNO VII, Bormio - Italy**  
Spectral behavior of the transient black hole candidate 4U 1630-47.
- 2011      **Talk: X-ray Astrophysics up to 511 keV, Ferrara - Italy**  
The LAUE project: a broad band gamma-ray focusing lens.
- 2010      **Talk: Kendziorra Workshop, Tubingen - Germany**  
Extending the pass-band of focusing hard X-ray telescopes beyond 80 keV  
and development status of Laue lenses for soft gamma-rays.
- 2007      **Talk: Congresso Nazionale Oggetti Compatti CNO V, S.Vito lo Capo - Italy**  
RXTE long term monitoring of the black-hole transient 4U 1630-47.



## PUBLICATIONS

### REFEREED INVITED BOOK CHAPTER

- 2016      **Handbook of Astronomical Instrumentation.**  
E. Virgilli and other authors, World Scientific Publishing Corp. (WSPC). Forthcoming fall 2016

### REFEREED ARTICLES

- 2016      **Focusing effect of bent GaAs crystals for  $\gamma$ -ray Laue lenses: Monte Carlo and experimental results.**  
E. Virgilli, Frontera, F.; Rosati, P.; Bonnini, E.; Buffagni, E.; Ferrari, C.; Stephen, J. B.; Caroli, E.; Auricchio, N.; Basili, A.; Silvestri, S.
- 2016      **Simulation of a Laue lens with bent Ge(111) crystals.**  
V. Valsan, E. Virgilli, F. Frontera, V. Liccardo, E. Caroli, J. Stephen
- 2015      **Hard x-ray broad band Laue lenses (80-600 keV): building methods and performances**  
E. Virgilli, Frontera, F.; Rosati, P.; Liccardo, V.; Squerzanti, S.; Carassiti, V.; Caroli, E.; Auricchio, N.; Stephen, J. B.
- 2015      **New Developments in the LAUE Project**  
Liccardo, V.; Frontera, F.; E. Virgilli, Valsan, V.
- 2015      **A simulation study on the focal plane detector of the LAUE project**  
Khalil, M.; Frontera, F.; Caroli, E.; Virgilli, E.; Valsan, V.
- 2014      **Study and characterization of bent crystals for Laue lenses**  
Liccardo, Vincenzo; Virgilli, Enrico; Frontera, Filippo; Valsan, Vineeth; Buffagni, Elisa; Ferrari, Claudio; Bonnini, Elisa; Zappettini, Andrea; Guidi, Vincenzo; Bellucci, Valerio; Camattari, Riccardo.
- 2008      **A gamma-ray Laue lens focusing telescope aboard a balloon experiment.**  
Frontera, F.; Loffredo, G.; Pisa, A.; Virgilli, E.; Carassiti, V.; Evangelisti, F.; Landi, L.; Squerzanti, S.; Auricchio, N.; Caroli, E.; Landini, G.; Silvestri, S.; Stephen, J. B. *Memorie della Società Astronomica Italiana*, v.79, p.807 (2008)

### NON-REFEREED PUBLICATIONS

- 2015      **X-ray characterization of curved crystals for hard x-ray astronomy**  
Buffagni, Elisa; Bonnini, Elisa; Ferrari, Claudio; Virgilli, Enrico; Frontera, Filippo
- 2014      **The LAUE project and its main results.**  
E. Virgilli, F. Frontera, V. Valsan, V. Liccardo, V. Carassiti, F. Evangelisti, S. Squerzanti, M. Parise, M. Statera, v. Guidi, , V. Bellucci, R. Camattari, E. Caroli, N. Auricchio, A. Basili, S. Silvestri, J. B. Stephen, F. Cassese, L. Recanatesi, C. Ferrari, A. Zappettini, E. Buffagni, S.

Mottini, M. Pecora, and B. Negri. Volume 8861 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Sep. 2013.

- 2013      **The ground support equipment for the LAUE project.**  
Caroli, E.; Auricchio, N.; Basili, A.; Carassiti, V.; Cassese, F.; Del Sordo, S.; Frontera, F.; Pecora, M.; Recanatesi, L.; Schiavone, F.; Silvestri, S.; Squerzanti, S.; Stephen, J. B.; **Virgilli, E.** Proceedings of the SPIE, Volume 8861, id. 886108 13 pp. (2013).
- 2013      **Bent crystal selection and assembling for the LAUE project.**  
V. Liccardo, **E. Virgilli**, F. Frontera, V. Valsan, V. Guidi, and E. Buffagni. In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 8861 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Sep. 2013.
- 2013      **Results of the simulations of the petal/lens as part of the LAUE project.**  
V. Valsan, F. Frontera, **E. Virgilli**, V. Liccardo, E. Caroli, and J. B. Stephen. In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 8443 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Oct. 2013.
- 2013      **Scientific prospects in soft gamma-ray astronomy enabled by the LAUE project.**  
F. Frontera, **E. Virgilli**, V. Valsan, V. Liccardo, V. Carassiti, E. Caroli, F. Cassese, L. Recanatesi, C. Ferrari, V. Guidi, M. Pecora, S. Mottini, L. Amati, N. Auricchio, L. Bassani, R. Campana, R. Farinelli, C. Guidorzi, C. Labanti, R. Landi, A. Malizia, M. Orlandini, V. Sguera, J. B. Stephen, and L. G. Titarchuk. Volume 8861, 2013.
- 2013      **Laue lenses for hard x-/soft gamma-rays: new prototype results.**  
V. Liccardo, **E. Virgilli**, F. Frontera, V. Valsan, V. Carassiti, F. Evangelisti, S. Squerzanti.
- 2012      **Characterization of bent crystals for laue lenses.**  
V. Liccardo, **E. Virgilli**, F. Frontera, and V. Valsan. In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 8443 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Sep. 2012.
- 2012      **Expected performance of a laue lens based on bent crystals.**  
V. Valsan, F. Frontera, **E. Virgilli**, and V. Liccardo. In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 8443 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Sept. 2012.
- 2012      **Development status of the laue project.**  
F. Frontera, **E. Virgilli**, V. Liccardo, V. Valsan, V. Carassiti, S. Chiozzi, F. Evangelisti, S. Squerzanti, M. Statera, V. Guidi, C. Ferrari, R. A. Zappettini, E. Caroli, N. Auricchio, S. Silvestri, R. Camattari, F. Cassese, L. Recanatesi, M. Pecora, S. Mottini, and B. Negri. In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 8443 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Sep. 2012.
- 2012      **Gamma-ray laue lenses under development for deep agn observations.**  
F. Frontera, **E. Virgilli**, V. Liccardo, V. Valsan, V. Carassiti, F. Evangelisti, S. Squerzanti, and G. Risaliti. Journal of Physics Conference Series, 355(1):012005, March 2012.
- 2012      **Gamma-ray Laue lenses under development for deep AGN observations.**

Frontera, F.; **Virgilli, E.**; Liccardo, V.; Valsan, V.; Carassiti, V.; Evangelisti, F.; Squerzanti, S.; Risaliti, G.

- 2011      **The LAUE project for broadband gamma-ray focusing lenses.**  
E. **Virgilli**, F. Frontera, V. Valsan, V. Liccardo, E. Caroli, J. Stephen, F. Cassese, L. Recanatesi, M. Pecora, S. Mottini, P. Attinà, B. Negri. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series 2011, Vol. 8147
- 2011      **Laue lenses for hard x-/soft gamma-rays: new prototype results.**  
E. **Virgilli**, F. Frontera, V. Valsan, V. Liccardo, V. Carassiti, F. Evangelisti, and S. Squerzanti. . In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 8147 of Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Sep. 2011.
- 2011      **The Laue Project: A Focusing Lens For Broadband Soft X-/gamma-rays.**  
E. **Virgilli**; Frontera, F.; Vineeth, V.; Liccardo, V.
- 2011      **Test results of a new laue lens prototype for soft gamma-rays.**  
V. Valsan, E. **Virgilli**, V. Liccardo, and F. Frontera. In X-ray Astrophysics up to 511 keV, Sep. 2011.
- 2011      **Evidence Of A Black Hole In The X-ray Binary System Cygnus X-3**  
Lombardi, C.; **Virgilli, E.**; Titarchuk, L.; Frontera, F.; Farinelli, R.
- 2009      **New results on focusing of gamma-rays with Laue lenses.**  
Ferrari, F.; Frontera, F.; Loffredo, G.; **Virgilli, E.**; Guidorzi, C.; Carassiti, V.; Evangelisti, F.; Landi, L.; Chiozzi, S.; Squerzanti, S.; Caroli, E.; Stephen, J. B.; Schiavone, F.; Basili, A.; Andersen, K. H.; Courtois, P. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. Vol. 7437, August 2009.
- 2006      **Color-color diagrams of Z and Atoll sources observed with INTEGRAL/JEM-X.**  
Venier, Elisa; **Virgilli, E.**; Farinelli, R.; Frontera, F.
- 2004      **INTEGRAL Observations of Four Neutron-Star Low Mass X-Ray Binaries: GX 3+1, GX 354-0, GX 349+2 and the Rapid Burster.**  
Farinelli, R.; Frontera, F.; **Virgilli, E.**; Falanga, M.; Goldoni, P.; Goldwurm, A. Proceedings of the 5th INTEGRAL Workshop on the INTEGRAL Universe (ESA SP-552). 16-20 February 2004, Munich, Germany. Scientific Editors: V. Schnfelder, G. Lichti and C. Winkler, p.317

January 12, 2017

Il sottoscritto acconsente, ai sensi del D.Lgs. 30/06/2003 n.196, al trattamento dei propri dati personali e alla pubblicazione del presente curriculum vitae sul sito dell'Università di Ferrara.