

CURRICULUM VITAE (February 2010)

GIANLUCA IMBRIANI

Place and Date of Birth 23-11-1971, Potenza, Italy
Marital Status Married, 2 children
Current Position **Researcher at University of Naples *Federico II***
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Main Fields of Interest Experimental Nuclear Physics, Nuclear Astrophysics, Stellar Physics

EDUCATION AND WORKING EXPERIENCE

AA 1995-1996 University of Naples *Federico II* **Master Degree cum Laude in Physics**

1997 Capodimonte Astronomical Observatory of Naples **Fellowship post-degree**

March 1998 University of Naples *Federico II* **Phd fellowship position in Fundamental and Applied Physics**

A.A 1999-2000 University of Naples *Federico II* Grant in the framework of the young researcher project with a title for:
“Detection efficiency optimization of a recoil mass separator”

November 2000 Second University of Naples
Post-doc contract position (Assegno di Ricerca) – 1 year

March 2001 University of Naples *Federico II*
Phd “Stellar evolution and Nuclear reaction rates an experimental and theoretical work” (available on net <http://www.na.infn.it/~imbriani>)

November 2001 Ruhr Universität of Bochum (Germany)
Wissenschaftlicher Mitarbeiter – 6 months

April 2002 Collurania Observatory of Teramo (INAF) and
National Laboratory of Gran Sasso
Post-doc associated researcher (Assegno di Ricerca) - 2 years

April 2004 University of Naples *Federico II*
Post-doc associated researcher (Assegno di Ricerca) - 2 years

November 2006 Collurania Observatory of Teramo (INAF)
Post-doc associated researcher (Assegno di Ricerca) - 2 years

February 2007 University of Notre Dame
Visiting faculty - winter semester

November 2007 **Researcher at University of Naples *Federico II***

July 2008 University of Notre Dame
Visiting faculty - summer semester

October 2009 University of Notre Dame
Visiting faculty - 1 month

ENGAGEMENTS IN RESEARCH PROJECTS

- 2000-2001 **Principal Investigator: Young Researcher Project, University of Naples “Federico II”**
Ottimizzazione dell’efficienza di rivelazione di un separatore di ioni rinculo per la misura di sezione d’urto di interesse astrofisica
- 1999-2000 Responsible for $p+^7\text{Be}$ elastic scattering measurement in the framework of NABONA experiment.
- 2002-2005 Responsible for $^{14}\text{N}(p,\gamma)^{15}\text{O}$ cross section measurement with the high resolution set up in the framework of LUNA experiment.
- 2003 Responsible for the grant in the framework of the agreement of collaboration between INFN and MEC (Education and Science Ministry of Spain).
- 2005-2007 Responsible for the LUNA astrophysics working group to define the new proposal of the experiment.
- 2005 Responsible for the grant in the framework of the agreement of collaboration between INFN and MEC (Education and Science Ministry of Spain).
- 2006-2008 Responsible for $^{25}\text{Mg}(p,\gamma)^{26}\text{Al}$ cross section measurement in the framework of LUNA experiment.
- 2007-2009 Responsible for $^{15}\text{N}(p,\gamma)^{16}\text{O}$ cross section measurement in the framework of a collaboration between LUNA and Notre Dame university .
- 2009 Responsible for the grant in the framework of the agreement of collaboration between INFN and MEC (Education and Science Ministry of Spain).
- From 2007 Local Coordinator of LUNA experiment.
- From 2008 Responsible for the construction of γ -detector setup for ERNA.

TEACHING EXPERIENCE

- 2000-2001 Second University of Naples
Assistant to the Course of Physics II for mathematician
- 2005 Lecturer at **Euro Summer School: Experimental Nuclear Astrophysics**
Santa Tecla, 3 – 8 October 2005
- From 2007 University of Naples *Federico II*
Assistant to the Course of Physics II for physicist and Physics Lab 3rd
- 2009 Lecturer at **Euro Summer School: Experimental Nuclear Astrophysics**
Santa Tecla, 21 – 26 Settembre 2009

PRESENTATIONS IN INTERNATIONAL CONFERENCES

Talks

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- 1999 **Nuclear Reactions in Stars and in the Laboratory**
*ECT** Trento, 8-19 February 1999
- 2000 **Nuclei in the Cosmos**
Arhus (Denmark), 27 June-1 July 2000
- 2002 **11th Workshop on Nuclear Astrophysics**
Ringberg Castle Tegernsee, Monaco (Germany) 11-16 February 2002

- 17th International Nuclear Physics Divisional Conference of the European Physical Society (NPDC-17),**
 ATOMKI, Debrecen (Hungary), 30 September-4 October, 2002
- 2003 **Workshop on forthcoming facilities at LNS: EXCYT and MAGNEX**
 Catania, 20-22 March 2003
- 20th Meeting between Astrophysicists and Nuclear Physicists,** Brussels, 15-16
 December 2003
- 2006 **International School of Nuclear Physics, 28nd course: Radioactive Beams**
Nuclear and Astrophysics
 Erice, 16-24 Settembre 2006
- ECOS Town Meeting**
 5-6 October 2006, Amphithéâtre du CNRS, Paris
- 2007 **The IXth Torino Workshop on Evolution and Nucleosynthesis in AGB Stars &**
The IInd Perugia Workshop in Nuclear Astrophysics
 22-26 October 2007, Perugia, Italy – invited talk
- 2008 **A Workshop on R-Matrix and Nuclear Reactions in Stellar Hydrogen and**
Helium Burning
 April, 2008 La Fonda, Santa Fe, New Mexico, USA – invited talk
- 10th Symposium on Nuclei in the Cosmos**
 Mackinac Island, Michigan, USA, July 2008
- 2009 **Solar Fusion Cross Sections for the pp chain and CNO cycle**
 Institute for Nuclear Theory, University of Washington, January 2009 – invited talk
- 3rd Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan**
 Waikoloa, Hawaii, October 13–17, 2009 – invited talk

Poster Presentations

- 2001 **5th International Topical Workshop at the Gran Sasso Laboratory "Solar**
Neutrinos: Where are the Oscillations?"
 Assergi, 12-14 March 2001
- 2002 **NATO ADVANCED RESEARCH WORKSHOP ON WHITE DWARFS**
 Napoli, 24-28 June 2002
- 2003 **International conference Thinking, Observing and Mining the Universe,**
 Sorrento, 22-27 September 2003
- 2004 **International Nuclear Physics Conference (INPC2004)**
 Goteborg (Sweden), 27 Giugno–2 Luglio, 2004
- 2005 **International Conference on Frontiers in Nuclear Structure, Astrophysics and**
Reactions.
 Aegean island of Kos, Greece, September 12-17, 2005

In may 2006 I have been recommended for a faculty Assistant Professor position at the Notre Dame University, IN, USA.

Languages: Italian (mother-tongue) and English (fluent both in written and verbal).

I have been invited to give seminars at the Capodimonte Observatory of Naples, at the University of Pisa, at University of Stuttgart, at the Collurania Astronomical Observatory of Teramo, at the

University of Granada at the University of Notre Dame and at the Lawrence Berkeley National Laboratory.

I was co-organizer of the National Meetings of Nuclear Astrophysics (Naples, March 18th-19th 1999 and Teramo, April 20th-22nd 2005), of the international meeting “The role of low energy fusion reactions in nuclear astrophysics: carbon burning” (Villa Orlandi, Anacapri, Naples, Italy May 14th - 16th, 2009) and member of the local organizing committee of the first Euro Summer School: Experimental Nuclear Astrophysics (Santa Tecla 30 September - 7 October 2001).

I am associated to the INFN (Italian Institute of Nuclear Astrophysics) since 1996.

I am member of the JINA (Join Institute for Nuclear Astrophysics) institute, University of Notre Dame.

I am a member of the accelerator team at DUSEL underground laboratory in South Dakota.

Summary report of my research activities

Since the beginning of my research activity I have been involved both in experimental nuclear physics and theoretical stellar evolution, measuring nuclear cross sections of astrophysical interest and studying its influence on stellar astrophysics. I carry out my research activity in the framework of national (Seconda Università di Napoli, Laboratori Nazionali dell'Istituto Nazionale di Fisica Nucleare del Gran Sasso e del Sud, Osservatorio Astronomico di Teramo e Osservatorio Astronomico di Roma, i Dipartimenti di Ingegneria Meccanica per l'Energetica ed Ingegneria Elettronica per le Telecomunicazioni dell'Università di Napoli "Federico II") and international (Ruhr-Universität, Bochum, Germania, University of Granada, Spain, Notre Dame University Notre Dame, IN, USA and Lawrence Berkeley National Laboratory, Berkeley, USA) collaborations.

As far as my experimental activities are concerned I participated to the measurement of some nuclear reaction processes of astrophysical interest in the framework of three experiments mainly funded by INFN: NABONA (NAPoli BOchum Nuclear Astrophysics), LUNA (Laboratory Underground for Nuclear Astrophysics) and ERNA (European Recoil Separator for Nuclear Astrophysics).

For the theoretical activity I have studied the evolution of stars by means of the FRANEC stellar evolution code, focusing on the influence of nuclear reaction rate uncertainties on the evolution of stars. During these activities I collaborated with the stellar evolution groups of the Teramo and Rome Astronomical Observatories.

Moreover I took part to the PRIN "*Nucleosintesi in stelle di massa piccola e intermedia: test cruciali dalle prime fasi evolutive delle galassie e del sistema solare*", which was funded in 2004.

I coordinated the Italian side of the grants obtained in the framework of the international agreement between INFN and MEC (Education and Science Ministry of Spain) in 2003, 2005 and 2009. The aim of these grants are to establish a collaboration with the astrophysical group of the university of Granada to identify, which nuclear processes need to be better investigate and the astrophysical impact of the new experimental results.

It is in the nature of astrophysics that many of the processes and objects one tries to understand are physically inaccessible. Thus, it is important that those aspects that can be studied in the laboratory be rather well understood. One such aspects are the nuclear fusion reactions, which are at the heart of nuclear astrophysics. The theories of nucleosynthesis have identified the most important sites of element formation and also the diverse nuclear processes involved in their production. The detailed understanding of the origin of the chemical elements combines astrophysics and nuclear physics, and forms what is called nuclear astrophysics. Nuclear fusion reactions are at the heart of nuclear astrophysics: they influence sensitively the nucleosynthesis of the elements in the earliest stages of the universe and in all the objects formed thereafter, and control the associated energy generation, neutrino luminosity, and evolution of stars. A good knowledge of the rates of these reactions is thus essential for understanding the broad picture outlined above.

The aim of experimental nuclear astrophysics is to measure the nuclear reaction rate at the relevant astrophysical energies, which are very low. Indeed, in a stellar environment the energy available to nuclear species is very much lower than the Coulomb barrier, i.e. nuclear reactions happen via tunnel effect. The main problem of direct measurements is determined by the background signals, which, together with the low cross sections, set a limit to the energy range that can be investigated with a simple setup on the Earth surface. Essentially there are three sources of background, i.e. cosmic rays; environmental radioactivity and beam-target induced nuclear reactions. Each of these sources produces background of different nature and energy, so that each reaction to be studied deserves a special care in suppressing the relevant background component.

In the last years I contributed to develop two different approaches to solve the background problems. Background effects of cosmic rays in the detectors lead typically to more than 10 events per hour in common detectors. Conventional passive or active shielding around the detectors can only partially reduce the problem. The best solution is to install an accelerator facility in a laboratory deep underground, similar to the solar neutrino detectors, like the one that can be obtained at the INFN underground laboratory at Gran Sasso (LNGS). The LUNA (Laboratory Underground for Nuclear Astrophysics) experiment set up in the last decade a worldwide still unique facility for measuring low energy cross sections of astrophysical interest, installing two

accelerators, respectively 50 and 400 kV, at LNGS.

The second approach is based on quite complex apparatuses in order to optimize the detection efficiency, selectivity and the background suppression. An example of that is provided by Recoil Mass Separators, which allow measuring the cross section of radiative capture reactions by means of the detection of the residual nucleus, without the need of gamma measurements, which can be eventually performed in order to gain information on the transitions involved in the reaction. I participated to the construction of two recoil separators. The first was built in Naples, i.e. NaBoNA (Naples Bochum Nuclear Astrophysics) experiment, to study the ${}^7\text{Be}(p,\gamma){}^8\text{B}$. A new separator has been designed and, firstly, installed at the Dymanitron Tandem Laboratorium of the Ruhr-Universitaet Bochum to study ${}^{12}\text{C}(\alpha,\gamma){}^{16}\text{O}$ and ${}^3\text{He}({}^4\text{He},\gamma){}^7\text{Be}$ reactions, ERNA experiment. This separator is now in Caserta at the CIRCE laboratory.

I am involved in LUNA experiment since 1998 and I have participated to the measurement of ${}^3\text{He}({}^3\text{He},2p){}^4\text{He}$, $d({}^3\text{He},p){}^4\text{He}$, $d(p,\gamma){}^3\text{He}$, ${}^3\text{He}({}^4\text{He},\gamma){}^7\text{Be}$, ${}^{14}\text{N}(p,\gamma){}^{15}\text{O}$, ${}^{15}\text{N}(p,\gamma){}^{16}\text{O}$ and ${}^{25}\text{Mg}(p,\gamma){}^{26}\text{Al}$ cross sections. In particular, I have worked on the installation and calibration of the 400kV accelerator. With this machine I have been in charged to coordinate the measurements of ${}^{14}\text{N}(p,\gamma){}^{15}\text{O}$, ${}^{15}\text{N}(p,\gamma){}^{16}\text{O}$ and ${}^{25}\text{Mg}(p,\gamma){}^{26}\text{Al}$ cross sections down to energy never reached in past using high resolution setup together with solid targets.

The ${}^{14}\text{N}(p,\gamma){}^{15}\text{O}$ reaction is the slowest process in the CNO cycle. The key astrophysical issues related to this process are the quantification of the solar neutrino flux due to the CNO cycle partially active in the sun and the age of Globular Clusters. The resulting reaction rate after our experiment is lower than a factor 2 in comparison with the previous determination. This reduction had already several astrophysical implications. In the sun the CNO cycle contributes only 2% (instead of 4%) to the total energy production and thus the corresponding portions of solar neutrinos (i.e. below $E_\nu = 7$ MeV) is reduced by this factor. Moreover, I analyzed the impact of the revised reaction rate on the estimate of the Globular Cluster ages, as derived from the turnoff luminosity, finding that the age of the oldest Globular Clusters should be increased by about 0.7-1 Gyr with respect to the current estimates. This result was received from the international scientific community with much interest. In fact, the study of the Globular Cluster age represents an independent way to establish a lower limit to the age of the Universe.

Observations of various satellites have discovered a γ -ray line at 1809 keV, which arises from the β -decay of ${}^{26}\text{Al}$ to ${}^{26}\text{Mg}$. The intensity of the line corresponds to about 3 solar masses in our galaxy. The nuclides ${}^{26}\text{Al}$ are produced mainly via the ${}^{25}\text{Mg}(p,\gamma){}^{26}\text{Al}$ capture reaction, which operates in the core-H burning of massive stars and in shell-H burning of intermediate and low mass stars (during the Asymptotic Giant Branch phase, in particular), and possibly during the explosive H burning in novae. The ${}^{25}\text{Mg}(p,\gamma){}^{26}\text{Al}$ also operates in the carbon and neon burning shells of massive stars, both statically and explosively. This reaction belongs to the so-called Mg-Al cycle. The reaction is dominated by narrow resonances which have been found down to $E_L = 190$ keV. From the known level structure of ${}^{26}\text{Al}$ one expects low-lying resonances at $E_{cm} = 93, 109, \text{ and } 130$ keV, among which the 93 keV resonance appeared most important. Indeed, the 93 and 130 keV resonances were found at LUNA using the 4π BGO crystal and a ${}^{25}\text{Mg}$ solid target. The data allow now for improved astrophysical calculations of the origin of the 1809 keV line as well as of the chemical evolution of galaxies.

In 2007, I have been invited as a visiting faculty from the Notre Dame University, Indiana, USA, to initiate a work to measure the ${}^{15}\text{N}(p,\gamma){}^{16}\text{O}$. The proton capture at ${}^{15}\text{N}$ is relevant since the compound nucleus ${}^{16}\text{O}$ can decay into the α particle channel as well as into the γ channel to the ground state of ${}^{16}\text{O}$. This introduces a reaction branch linking the first CNO or CN cycle with the second CNO, or NO cycle. The strength of the branching has always been a matter of debate since both reactions are characterized by strong low energy resonances. High precision experiments performed at higher energies in a wide energy range are extremely important, since they become complementary to low energy data when direct measurements are not possible. Following this idea a collaboration started between NSL at the Notre Dame University and the LUNA collaboration to study with the same experimental setup the ${}^{15}\text{N}(p,\gamma){}^{16}\text{O}$ in a wide energy range starting from energies up to 2 MeV using the KN accelerator at ND and going down to 100 keV using the 400 kV LUNA accelerator. With these new data a complete fit has been performed improving the knowledge of this process.

The use of a recoil mass separator is an effective way to measure the cross section in cases where beam induced background or some problem of normalization among different experiments are dominant already at energies accessible in laboratories above ground. With such an experimental approach it is possible to measure the total cross section of the process counting the number of recoil particles arising from the reaction. The difficulties are to collect all the recoils, which have angular and momentum dispersion due to the kinematics of the reaction and to separate the recoil from the incident beam, which is many orders of magnitude more intense.

In the first case we wanted to test the advantages of this experimental technique by studying the case of the ${}^7\text{Be}(p,\gamma){}^8\text{B}$ reaction rate, which is, together with ${}^3\text{He}({}^4\text{He},\gamma){}^7\text{Be}$, the most uncertain ingredient in the interpretation of solar neutrino experiment. Since ${}^7\text{Be}$ is radioactive the direct detection of the γ arising from the reaction is hampered. The usual way to study this process is to detect the α particles emitted in the decay of ${}^8\text{B}$, but the results from different experiments show a scatter larger than the experimental errors. We have shown the possibility to measure the ${}^7\text{Be}(p,\gamma){}^8\text{B}$ reaction rate with the recoil mass separator. Our estimate is lower than previous results, but is affected by a large statistical error due to the low number of ${}^8\text{B}$ recoils collected. Improvements on the radioactive beam production and transmission through the machine have been reached using the new apparatus available in Caserta and soon we plan to improve the results of the previous experiment. I have done a study of the solar model to determine the actual level of uncertainty of the solar neutrino fluxes due to the nuclear physics input. Moreover, I quoted which level of precision is reachable in the estimates of the neutrino parameters folding these data with the results of the solar neutrino detection experiments.

The follow-up of the NABONA experiment is ERNA, which was designed to measure the ${}^{12}\text{C}(\alpha,\gamma){}^{16}\text{O}$ cross section. Despite of the enormous effort devoted to the measurement of this cross section, its rate is still far from being well established at astrophysical energies. Recoil mass separator technique represent an excellent alternative to measure directly this cross section avoiding the problem due to the complicated energy level scheme of the ${}^{16}\text{O}$ around the relevant astrophysical energy. In the first data acquisition we collected data in the energy window of 2 to 5 MeV, improving the knowledge of the nuclear process.

From the astrophysical point of view, the ${}^{12}\text{C}(\alpha,\gamma){}^{16}\text{O}$ process influences the evolution of a star essentially in two respects: first, it affects the He burning because it directly operates in this evolutionary phase, and, second, it determines all further evolution of a star because it controls the chemical composition of the matter left by the He burning. Theoretical efforts devoted to constrain the rate of this process on the basis of some "observables", as the solar abundances of carbon and oxygen, are useless since, unfortunately, this process works in a convective environment which may alter, also significantly, the final abundances of ${}^{12}\text{C}$ and ${}^{16}\text{O}$. I have shown in my works which is the actual degeneracy between the effects of the ${}^{12}\text{C}(\alpha,\gamma){}^{16}\text{O}$ reaction rate uncertainty and the convection scheme adopted. These papers published on ApJ are much cited from the scientific community.

The last experiment that we have performed with ERNA, before to move it in Caserta, has been the ${}^3\text{He}({}^4\text{He},\gamma){}^7\text{Be}$. The total cross section was measured in the energy range $E = 700 - 3200$ keV.

In the comparison with previous works, there is a significant discrepancy of both the absolute scale and the energy dependence of the S-factor from previous results in the energy range $E > 1000$ keV. Direct capture model does not provide a good description of the observed energy dependence of the S-factor above 1 MeV, where it is supposed to be still accurate.

SCIENTIFIC PUBLICATIONS

58 papers on international refereed journals and 1 review on Report on Progress in Physics

Sum of the times cited: **1062**

Average citation per papers on international refereed journals: **25.29**

h-index: **20**

(data from: ISI Web of knowledge)

Total I.F.: 158.924

Relative I.F.: 94.4

Median IP first/last author: 4.108

Subject categories:

Physics, Nuclear [A]

Physics, Multidisciplinary [B]

Nuclear Science & Technology [C]

Astronomy & Astrophysics [D]

	PUBLICATIONS ON INTERNATIONAL REFEREED JOURNALS	I.F.	Rel.	Cit.
<u>1</u>	LUNA: a laboratory for underground nuclear astrophysics Costantini, H.; Formicola, A.; Imbriani, G. ; Junker, M.; Rolfs, C.; Strieder, F. Reports on Progress in Physics, Volume 72, Issue 8, pp. 086301 (2009).	<u>12.090</u>	4/68 Q1 [B] 2	<u>0</u>
<u>2</u>	Stellar and Primordial Nucleosynthesis of ${}^7\text{Be}$: Measurement of ${}^3\text{He}(\alpha,\gamma){}^7\text{Be}$ di Leva, A.; Gialanella, L.; Kunz, R.; Rogalla, D.; Schuermann, D.; Strieder, F.; de Cesare, M.; de Cesare, N.; D'Onofrio, A.; Fulop, Z.; Gyurky, G.; Imbriani, G. ; Mangano, G.; Ordine, A.; Roca, V.; Rolfs, C.; Romano, M.; Somorjai, E.; Terrasi, F. Physical Review Letters, vol. 102, Issue 23, id. 232502 (2009)	<u>7.180</u>	5/68 Q1 [B] 2	<u>1</u>
<u>3</u>	Ultra-sensitive in-beam γ -ray spectroscopy for nuclear astrophysics at LUNA Caciolli, A.; Agostino, L.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Confortola, F.; Corvisiero, P.; Costantini, H.; Elekes, Z.; Formicola, A.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, Gy.; Imbriani, G. ; Junker, M.; Laubenstein, M.; Lemut, A.; Limata, B.; Marta, M.; Mazzocchi, C.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Rossi Alvarez, C.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. The European Physical Journal A, Volume 39, Issue 2, pp.179-186 (2009)	<u>2.015</u>	8/20 Q3 [B] 1.2	<u>2</u>
<u>4</u>	The ${}^3\text{He}(\alpha,\gamma){}^7\text{Be}$ S-factor at solar energies: The prompt γ experiment at LUNA Costantini, H.; Bemmerer, D.; Confortola, F.; Formicola, A.; Gyurky, Gy.; Bezzon, P.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Elekes, Z.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Laubenstein, M.; Lemut, A.; Limata, B.; Lozza, V.; Marta, M.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Alvarez, C. Rossi; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Nuclear Physics A, Volume 814, Issue 1-4, p. 144-158 (2008)	<u>1.959</u>	9/20 Q3 [A] 1.2	<u>4</u>
<u>5</u>	Recoil separator ERNA: Measurement of ${}^3\text{He}(\alpha,\gamma){}^7\text{Be}$ di Leva, A.; de Cesare, M.; Schuermann, D.; de Cesare, N.; D'Onofrio, A.; Gialanella, L.; Kunz, R.; Imbriani, G. ; Ordine, A.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Somorjai, E.; Strieder, F.; Terrasi, F. Nuclear Instruments and Methods in Physics Research Section A, Volume 595, Issue 2, p. 381-390 (2008)	<u>1.019</u>	8/30 Q2 [C] 1.6	<u>2</u>
<u>6</u>	Precision study of ground state capture in the ${}^{14}\text{N}(p,\gamma){}^{15}\text{O}$ reaction Marta, M.; Formicola, A.; Gyurky, Gy.; Bemmerer, D.; Broggini, C.; Caciolli, A.;	<u>3.124</u>	5/20 Q2	<u>7</u>

	Corvisiero, P.; Costantini, H.; Elekes, Z.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Kunz, R.; Lemut, A.; Limata, B.; Mazzocchi, C.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Alvarez, C. Rossi; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Vomiero, A Physical Review C, vol. 78, Issue 2, id. 022802 (2008)		[A] 1.6	
7	Ground state capture in $^{14}\text{N}(p,\gamma)^{15}\text{O}$ studied above the 259 keV resonance at LUNA Trautvetter, H. P.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Caciolli, A.; Confortola, F.; Corvisiero, P.; Costantini, H.; Elekes, Z.; Formicola, A.; Fulop, Zs; Gervino, G.; Guglielmetti, A.; Gyurky, Gy; Gustavino, C.; Imbriani, G. ; Junker, M.; Lemut, A.; Limata, B.; Marta, M.; Mazzocchi, C.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Rossi Alvarez, C.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Vezzo, S.; Vomiero, A. Journal of Physics G: Nuclear and Particle Physics, Vol. 35, Issue 1, p. 014019 (2008)	5.270	2/20 Q1 [A] 2	
8	Measurement of $^{25}\text{Mg}(p,\gamma)^{26}\text{Al}$ resonance strengths via gamma spectrometry Formicola, A.; Best, A.; Imbriani, G. ; Junker, M.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Caciolli, A.; Confortola, F.; Corvisiero, P.; Costantini, H.; Elekes, Z.; Fulop, Zs; Gervino, G.; Guglielmetti, A.; Gyurky, Gy; Gustavino, C.; Lemut, A.; Limata, B.; Marta, M.; Mazzocchi, C.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Rossi Alvarez, C.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H.P. Journal of Physics G: Nuclear and Particle Physics, Vol. 35, Issue 1, p. 014013 (2008)	5.270	2/20 Q1 [A] 2	
9	Comparison of the LUNA $^3\text{He}(\alpha,\gamma)^7\text{Be}$ activation results with earlier measurements and model calculations Gyurky, Gy; Bemmerer, D.; Confortola, F.; Costantini, H.; Formicola, A.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Elekes, Z.; Fulop, Zs; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Laubenstein, M.; Lemut, A.; Limata, B.; Lozza, V.; Marta, M.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Rossi Alvarez, C.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Journal of Physics G: Nuclear and Particle Physics, Vol. 35, Issue 1, p. 014002 (2008)	5.270	2/20 Q1 [A] 2	
10	Recent results and prospective of the LUNA experiment Imbriani, G. Progress in Particle and Nuclear Physics, v. 59, iss. 1, p. 193-195 (2007)	3.860	3/20 Q1 [A] 2	
11	Astrophysical S factor of the $^3\text{He}(\alpha,\gamma)^7\text{Be}$ reaction measured at low energy via detection of prompt and delayed γ rays Confortola, F.; Bemmerer, D.; Costantini, H.; Formicola, A.; Gyurky, Gy.; Bezzon, P.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Elekes, Z.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Laubenstein, M.; Lemut, A.; Limata, B.; Lozza, V.; Marta, M.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Alvarez, C. Rossi; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Physical Review C, vol. 75, Issue 6, id. 065803 (2007)	3.124	5/20 Q2 [A] 1.6	26
12	A new AMS facility in Caserta/Italy Terrasi, F.; Rogalla, D.; de Cesare, N.; D'Onofrio, A.; Lubritto, C.; Marzaioli, F.; Passariello, I.; Rubino, M.; Sabbarese, C.; Casa, G.; Palmieri, A.; Gialanella, L.; Imbriani, G. ; Roca, V.; Romano, M.; Sundquist, M.; Loger, R. Nuclear Instruments and Methods in Physics Research Section B (2007)	0.999	10/30 Q2 [C] 1.6	9
13	$\text{He}3(\alpha,\gamma)\text{Be}7$ cross section at low energies Gyurky, Gy.; Confortola, F.; Costantini, H.; Formicola, A.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Elekes, Z.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Laubenstein, M.; Lemut, A.; Limata, B.; Lozza, V.; Marta, M.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Alvarez, C. Rossi;	3.124	5/20 Q2 [A] 1.6	26

	Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Physical Review C, vol. 75, Issue 3, id. 035805 (2007)			
<u>14</u>	Study of beam heating effect in a gas target through Rutherford scattering Marta, M.; Confortola, F.; Bemmerer, D.; Boiano, C.; Bonetti, R.; Broggin, C.; Casanova, M.; Corvisiero, P.; Costantini, H.; Elekes, Z.; Formicola, A.; Fulop, Z.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, G.; Imbriani, G. ; Junker, M.; Lemut, A.; Limata, B.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Somorjai, E.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Nuclear Instruments and Methods in Physics Research Section A, Volume 569, Issue 3, p. 727-731 (2006)	<u>1.019</u>	<u>8/30 Q2</u> [C] <u>1.6</u>	<u>3</u>
<u>15</u>	Low energy measurement of the $^{14}\text{N}(p,\gamma)^{15}\text{O}$ total cross section at the LUNA underground facility Bemmerer, D.; Confortola, F.; Lemut, A.; Bonetti, R.; Broggin, C.; Corvisiero, P.; Costantini, H.; Cruz, J.; Formicola, A.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, Gy.; Imbriani, G. ; Jesus, A.; Junker, M.; Limata, B.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Rogalla, D.; Romano, M.; Rossi-Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H.P. Nuclear Physics A, Volume 779, p. 297-317 (2006)	<u>1.959</u>	<u>9/20 Q3</u> [A] <u>1.2</u>	<u>14</u>
<u>16</u>	Activation Measurement of the $\text{He3}(\alpha,\gamma)\text{Be7}$ Cross Section at Low Energy Bemmerer, D.; Confortola, F.; Costantini, H.; Formicola, A.; Gyurky, Gy.; Bonetti, R.; Broggin, C.; Corvisiero, P.; Elekes, Z.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Laubenstein, M.; Lemut, A.; Limata, B.; Lozza, V.; Marta, M.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Alvarez, C. Rossi; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Physical Review Letters, vol. 97, Issue 12, id. 122502 (2006)	<u>7.180</u>	<u>5/69 Q1</u> [B] <u>2</u>	<u>29</u>
<u>17</u>	Change of the ^7Be electron capture half-life in metallic environments Wang, B.; Yan, S.; Limata, B.; Raiola, F.; Aliotta, M.; Becker, H. W.; Cruz, J.; de Cesare, N.; D'Onofrio, A.; Fulop, Z.; Gialanella, L.; Gyurky, G.; Imbriani, G. ; Jesus, A.; Ribeiro, J. P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Schuermann, D.; Somorjai, E.; Strieder, F.; Terrasi, F. The European Physical Journal A, Volume 28, Issue 3, pp.375-377 (2006)	<u>2.015</u>	<u>8/20 Q2</u> [A] <u>1.6</u>	<u>20</u>
<u>18</u>	First measurement of the $^{14}\text{N}(p,\gamma)^{15}\text{O}$ cross section down to 70 keV Lemut, A.; Bemmerer, D.; Confortola, F.; Bonetti, R.; Broggin, C.; Corvisiero, P.; Costantini, H.; Cruz, J.; Formicola, A.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, Gy.; Imbriani, G. ; Jesus, A. P.; Junker, M.; Limata, B.; Menegazzo, R.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H.P. Physics Letters B, Volume 634, Issue 5-6, p. 483-487 (2006)	<u>4.034</u>	<u>7/68 Q1</u> [A] <u>2</u>	<u>37</u>
<u>19</u>	Electron screening in $d(d, p)t$ for deuterated metals: temperature effects Raiola, F.; Burchard, B.; Fulop, Zs.; Gyurky, Gy.; Zeng, S.; Cruz, J.; di Leva, A.; Limata, B.; Fonseca, M.; Luis, H.; Aliotta, M.; Becker, H. W.; Broggin, C.; D'Onofrio, A.; Gialanella, L.; Imbriani, G. ; Jesus, A. P.; Junker, M.; Ribeiro, J. P.; Roca, V.; Rolfs, C.; Romano, M.; Somorjai, E.; Strieder, F.; Terrasi, F. Journal of Physics G: Nuclear and Particle Physics, Vol. 31, Issue 11, 1141-1149 (2005)	<u>5.270</u>	<u>2/20 Q1</u> [A] <u>2</u>	<u>28</u>
<u>20</u>	New measurement of ^7Be half-life in different metallic environments Limata, B. N.; Fulop, Zs.; Schuermann, D.; de Cesare, N.; D'Onofrio, A.; Esposito, A.; Gialanella, L.; Gyurky, Gy.; Imbriani, G. ; Raiola, F.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Somorjai, E.; Strieder, F.; Terrasi, F. The European Physical Journal A, Volume 27, Issue 1, pp.193-196 (2006)	<u>2.015</u>	<u>8/20 Q2</u> [A] <u>1.6</u>	

<u>21</u>	<p>Towards a high-precision measurement of the ${}^3\text{He}(\alpha,\gamma){}^7\text{Be}$ cross section at LUNA</p> <p>Costantini, H.; Bemmerer, D.; Bezzon, P.; Bonetti, R.; Broggini, C.; Casanova, M. L.; Confortola, F.; Corvisiero, P.; Cruz, J.; Elekes, Z.; Formicola, A.; Fulop, Zs.; Gervino, G.; Gustavino, C.; Guglielmetti, A.; Gyurky, Gy.; Imbriani, G.; Jesus, A. P.; Junker, M.; Lemut, A.; Marta, M.; Menegazzo, R.; Prati, P.; Roca, E.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.</p> <p>The European Physical Journal A, Volume 27, Issue 1, pp.177-180 (2006)</p>	<u>2.015</u>	<u>8/20 Q2</u> [A]	<u>1.6</u>	
<u>22</u>	<p>CNO hydrogen burning studied deep underground</p> <p>Bemmerer, D.; Confortola, F.; Lemut, A.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Costantini, H.; Cruz, J.; Formicola, A.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, Gy.; Imbriani, G.; Jesus, A.P.; Junker, M.; Limata, B.; Menegazzo, R.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H.P.</p> <p>The European Physical Journal A, Volume 27, Issue 1, pp.161-170 (2006)</p>	<u>2.015</u>	<u>8/20 Q2</u> [A]	<u>1.6</u>	
<u>23</u>	<p>First direct measurement of the total cross-section of ${}^{12}\text{C}(\alpha,\gamma){}^{16}\text{O}$</p> <p>Schuermann, D.; di Leva, A.; Gialanella, L.; Rogalla, D.; Strieder, F.; de Cesare, N.; D'Onofrio, A.; Imbriani, G.; Kunz, R.; Lubritto, C.; Ordine, A.; Roca, V.; Rolfs, C.; Romano, M.; Schuemann, F.; Terrasi, F.; Trautvetter, H.-P.</p> <p>The European Physical Journal A, Volume 26, Issue 2, pp.301-305 (2005)</p>	<u>2.015</u>	<u>8/20 Q2</u> [A]	<u>1.6</u>	<u>20</u>
<u>24</u>	<p>S-factor of ${}^{14}\text{N}(p,\gamma){}^{15}\text{O}$ at astrophysical energies</p> <p>Imbriani, G.; Costantini, H.; Formicola, A.; Vomiero, A.; Angulo, C.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Confortola, F.; Corvisiero, P.; Cruz, J.; Descouvemont, P.; Fulop, Z.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, Gy.; Jesus, A. P.; Junker, M.; Klug, J. N.; Lemut, A.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Rossi-Alvarez, C.; Schuemann, F.; Schuermann, D.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.</p> <p>The European Physical Journal A, Volume 25, Issue 3, pp.455-466 (2005)</p>	<u>2.015</u>	<u>8/20 Q2</u> [A]	<u>1.6</u>	<u>33</u>
<u>25</u>	<p>Recent results of the ${}^{14}\text{N}(p,\gamma){}^{15}\text{O}$ measurement at LUNA</p> <p>H. Costantini, C. Angulo, D. Bemmerer, R. Bonetti, C. Broggini, F. Confortola, P. Corvisiero, J. Cruz, P. Descouvemont, A. Formicola, Z. Fülöp, G. Gervino, A. Guglielmetti, C. Gustavino, G. Gyürky, G. Imbriani, A.P. Jesus, M. Junker, A. Lemut, R. Menegazzo, P. Prati, V. Roca, C. Rolfs, M. Romano, C. Rossi Alvarez, F. Schümann, E. Somorjai, O. Straniero, F. Strieder, F. Terrasi, H.P. Trautvetter, A. Vomiero and S. Zavatarelli</p> <p>Nuclear Physics A, Vol. 758, p.383-386 (2005)</p>	<u>1.959</u>	<u>9/20 Q3</u> [A]	<u>1.2</u>	<u>3</u>
<u>26</u>	<p>Decay of ${}^7\text{Be}$ in metallic environment</p> <p>Zs. Fülöp, Gy. Gyürky, E. Somorjai, D. Schürmann, F. Raiola, F. Strieder, C. Rolfs, B.N. Limata, L. Gialanella, G. Imbriani, V. Roca, M. Romano, N. De Cesare, A. D'Onofrio, D. Rogalla and F. Terrasi</p> <p>Nuclear Physics A, Volume 758, p. 697-700 (2005)</p>	<u>1.959</u>	<u>9/20 Q3</u> [A]	<u>1.2</u>	<u>3</u>
<u>27</u>	<p>Measurement of the cross section of ${}^{12}\text{C}(\alpha,\gamma){}^{16}\text{O}$ using the recoil mass separator ERNA</p> <p>Schuermann, D.; di Leva, A.; de Cesare, N.; Gialanella, L.; Imbriani, G.; Kunz, R.; Lubritto, C.; Ordine, A.; Roca, V.; Rolfs, C.; Rogalla, D.; Romano, M.; Schuemann, F.; Strieder, F.; Terrasi, F.; Trautvetter, H.-P.</p> <p>Nuclear Physics A, Vol. 758, p.367-370 (2005)</p>	<u>1.959</u>	<u>9/20 Q3</u> [A]	<u>1.2</u>	<u>3</u>
<u>28</u>	<p>Feasibility of low-energy radiative-capture experiments at the LUNA underground accelerator facility</p> <p>Bemmerer, D.; Confortola, F.; Lemut, A.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Costantini, H.; Cruz, J.; Formicola, A.; Fulop, Zs.; Gervino, G.; Guglielmetti, A.</p>	<u>2.015</u>	<u>8/20 Q2</u> [A]		<u>19</u>

	Gustavino, C.; Gyurky, Gy.; Imbriani, G. ; Jesus, A. P.; Junker, M.; Limata, B.; Menegazzo, R.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Vomiero, A. The European Physical Journal A, Volume 24, Issue 2, pp.313-319 (2005)		<u>1.6</u>	
<u>29</u>	Recoil separator ERNA: charge state distribution, target density, beam heating, and longitudinal acceptance Schuermann, D.; Strieder, F.; Di Leva, A.; Gialanella, L.; De Cesare, N.; D'Onofrio, A.; Imbriani, G. ; Klug, J.; Lubritto, C.; Ordine, A.; Roca, V.; Roeken, H.; Rolfs, C.; Rogalla, D.; Romano, M.; Schuemann, F.; Terrasi, F.; Trautvetter, H. P. Nuclear Instruments and Methods in Physics Research Section A (2004)	<u>1.019</u>	<u>8/30 Q2</u> [C]	<u>12</u>
<u>30</u>	Astrophysical S-factor of $^{14}\text{N}(p,\gamma)^{15}\text{O}$ Formicola, A.; Imbriani, G. ; Costantini, H.; Angulo, C.; Bemmerer, D.; Bonetti, R.; Brogгинi, C.; Corvisiero, P.; Cruz, J.; Descouvemont, P.; Fulop, Z.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, G.; Jesus, A. P.; Junker, M.; Lemut, A.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Vomiero, A.; Zavatarelli, S. Physics Letters B, Volume 591, Issue 1-2, p. 61-68(2004)	<u>4.034</u>	<u>7/68 Q1</u> [A] <u>2</u>	<u>100</u>
<u>31</u>	Accelerator mass spectrometry at the 4 MV Dynamitron Tandem in Bochum Lubritto, C.; Rogalla, D.; Rubino, M.; Marzaioli, F.; Passariello, I.; Romano, M.; Spadaccini, G.; Casa, G.; di Leva, A.; de Cesare, N.; D'Onofrio, A.; Gialanella, L.; Imbriani, G. ; Palmieri, A.; Roca, V.; Rolfs, C.; Sabbarese, C.; Strieder, F.; Schuermann, D.; Terrasi, F. Nuclear Instruments and Methods in Physics Research Section B, Volume 222, Issue 1-2, p. 255-260 (2004)	<u>0.999</u>	<u>10/30 Q2</u> [C] <u>1.6</u>	<u>4</u>
<u>32</u>	Evolution and Nucleosynthesis of Primordial Low-Mass Stars Picardi, I.; Chieffi, A.; Limongi, M.; Pisanti, O.; Miele, G.; Mangano, G.; Imbriani, G. The Astrophysical Journal, Volume 609, Issue 2, pp. 1035-1044 (2004)	<u>6.331</u>	<u>6/48 Q1</u> [D] <u>2</u>	<u>18</u>
<u>33</u>	The bottleneck of CNO burning and the age of Globular Clusters Imbriani, G. ; Costantini, H.; Formicola, A.; Bemmerer, D.; Bonetti, R.; Brogгинi, C.; Corvisiero, P.; Cruz, J.; Fulop, Z.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, G.; Jesus, A. P.; Junker, M.; Lemut, A.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Vomiero, A.; Zavatarelli, S. Astronomy and Astrophysics, v.420, p.625-629 (2004)	<u>4.153</u>	<u>11/48 Q2</u> [D] <u>1.6</u>	<u>46</u>
<u>34</u>	Recoil separator ERNA: gas target and beam suppression Gialanella, L.; Schuermann, D.; Strieder, F.; di Leva, A.; de Cesare, N.; D'Onofrio, A.; Imbriani, G. ; Klug, J.; Lubritto, C.; Ordine, A.; Roca, V.; Roeken, H.; Rolfs, C.; Rogalla, D.; Romano, M.; Schuemann, F.; Terrasi, F.; Trautvetter, H. P. Nuclear Instruments and Methods in Physics Research Section A, Volume 522, Issue 3, p. 432-438 (2004)	<u>1.019</u>	<u>8/30 Q2</u> [C] <u>1.6</u>	<u>14</u>
<u>35</u>	Recoil separator ERNA: acceptances in angle and energy Rogalla, D.; Schuermann, D.; Strieder, F.; Aliotta, M.; Decesare, N.; Dileva, A.; Lubritto, C.; D'Onofrio, A.; Gialanella, L.; Imbriani, G. ; Kluge, J.; Ordine, A.; Roca, V.; Roeken, H.; Rolfs, C.; Romano, M.; Schuemann, F.; Terrasi, F.; Trautvetter, H. P. Nuclear Instruments and Methods in Physics Research Section A, Volume 513, Issue 3, p. 573-578 (2003)	<u>1.019</u>	<u>8/30 Q2</u> [C] <u>1.6</u>	<u>17</u>

36	The LUNA II 400kV accelerator Formicola, A.; Imbriani, G. ; Junker, M.; Bemmerer, D.; Bonetti, R.; Broggin, C.; Casella, C.; Corvisiero, P.; Costantini, H.; Gervino, G.; Gustavino, C.; Lemut, A.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; SchÄ¼rmann, D.; Strieder, F.; Terrasi, F.; Trautvetter, H.-P.; Zavatarelli, S. Nuclear Instruments and Methods in Physics Research Section A, Volume 507, Issue 3, p. 609-616 (2003)	1.019	8/30 Q2 [C] 1.6	40
37	A new study of the $^{14}\text{N}(p,\gamma)^{15}\text{O}$ reaction at low energy Formicola, A.; Costantini, H.; Imbriani, G. Nuclear Physics A, Volume 719, p. C94-C98 (2003)	1.959	9/20 Q3 [A] 1.2	2
38	The Chemical Composition of White Dwarfs as a Test of Convective Efficiency during Core Helium Burning Straniero, O.; Dominguez, I.; Imbriani, G. ; Piersanti, L. The Astrophysical Journal, Volume 583, Issue 2, pp. 878-884 (2003)	6.331	6/48 Q1 [D] 2	39
39	Charge state studies of low energy heavy ions passing through hydrogen and helium gas Liu, W.; Imbriani, G. ; Buchmann, L.; Chen, A. A.; D'Auria, J. M.; D'Onofrio, A.; Engel, S.; Gialanella, L.; Greife, U.; Hunter, D.; Hussein, A.; Hutcheon, D. A.; Olin, A.; Ottewell, D.; Rogalla, D.; Rogers, J.; Romano, M.; Roy, G.; Terrasi, F. Nuclear Instruments and Methods in Physics Research Section A, Volume 496, Issue 1, p. 198-214 (2003)	1.019	8/30 Q2 [C] 1.6	13
40	Off-line production of a ^7Be radioactive ion beam Gialanella, L.; Greife, U.; de Cesare, N.; D'Onofrio, A.; Romano, M.; Campajola, L.; Formicola, A.; Fulop, Z.; Gyurky, G.; Imbriani, G.; Lubritto, C.; Ordine, A.; Roca, V.; Rogalla, D.; Rolfs, C.; Russo, M.; Sabbarese, C.; Somorjai, E.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Nuclear Instruments and Methods in Physics Research Section B, Volume 197, Issue 1-2, p. 150-154 (2002)	1.019	8/30 Q2 [C] 1.6	6
41	A new setup for the underground study of capture reactions Casella, C.; Costantini, H.; Lemut, A.; Limata, B.; Bemmerer, D.; Bonetti, R.; Broggin, C.; Campajola, L.; Cocconi, P.; Corvisiero, P.; Cruz, J.; D'Onofrio, A.; Formicola, A.; Fulop, Z.; Gervino, G.; Gialanella, L.; Guglielmetti, A.; Gustavino, C.; Gyurky, G.; Loiano, A.; Imbriani, G. ; Jesus, A. P.; Junker, M.; Musico, P.; Ordine, A.; Parodi, F.; Parolin, M.; Pinto, J. V.; Prati, P.; Ribeiro, J. P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Rossi-Alvarez, C.; Rottura, A.; Schuemann, F.; Somorjai, E.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Vomiero, A.; Zavatarelli, S. Nuclear Instruments and Methods in Physics Research Section A, Volume 489, Issue 1-3, p. 160-169 (2002)	1.019	8/30 Q2 [C] 1.6	22
42	First measurement of the $d(p,\gamma)^3\text{He}$ cross section down to the solar Gamow peak Casella, C.; Costantini, H.; Lemut, A.; Limata, B.; Bonetti, R.; Broggin, C.; Campajola, L.; Corvisiero, P.; Cruz, J.; D'Onofrio, A.; Formicola, A.; Fulop, Z.; Gervino, G.; Gialanella, L.; Guglielmetti, A.; Gustavino, C.; Gyurky, G.; Imbriani, G. ; Jesus, A. P.; Junker, M.; Ordine, A.; Pinto, J. V.; Prati, P.; Ribeiro, J. P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Rossi-Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. Nuclear Physics A, Volume 706, Issue 1-2, p. 203-216 (2002)	1.959	9/20 Q3 [A] 1.2	55
43	Enhanced electron screening in $d(d,p)t$ for deuterated Ta Raiola, F.; Migliardi, P.; Gyurky, G.; Aliotta, M.; Formicola, A.; Bonetti, R.; Broggin, C.; Campajola, L.; Corvisiero, P.; Costantini, H.; Cruz, J.; D'Onofrio, A.; Fulop, Z.; Gervino, G.; Gialanella, L.; Guglielmetti, A.; Imbriani, G. ; Gustavino, C.; Jesus, A. P.;	2.015	8/20 Q2 [A] 1.6	55

	Junker, M.; Kavanagh, R.W.; Moroni, P. G. P.; Ordine, A.; Pinto, J. V.; Prati, P.; Roca, V.; Ribeiro, J. P.; Rogalla, D.; Rolfs, C.; Romano, M.; Schuemann, F.; Schuermann, D.; Somorjai, E.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. The European Physical Journal A, Volume 13, Issue 3, pp. 377-382 (2002)			
<u>44</u>	Absolute cross section of ${}^7\text{Be}(p,\gamma){}^8\text{B}$ Strieder, F.; Gialanella, L.; Gyurky, G.; Schuemann, F.; Bonetti, R.; Broggin, C.; Campajola, L.; Corvisiero, P.; Costantini, H.; D'Onofrio, A.; Formicola, A.; Fulop, Z.; Gervino, G.; Greife, U.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Moroni, P. G. P.; Ordine, A.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Somorjai, E.; Straniero, O.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. Nuclear Physics A, Volume 696, Issue 1-2, p. 219-230 (2001)	<u>1.959</u>	<u>9/20 Q3</u> [A] <u>1.2</u>	<u>49</u>
<u>45</u>	The ${}^{12}\text{C}(\alpha, \gamma){}^{16}\text{O}$ Reaction Rate and the Evolution of Stars in the Mass Range $0.8 \leq M/M_{\text{solar}} \leq 25$ Imbriani, G. ; Limongi, M.; Gialanella, L.; Terrasi, F.; Straniero, O.; Chieffi, A. The Astrophysical Journal, Volume 558, Issue 2, pp. 903-915 (2001)	<u>6.331</u>	<u>6/48 Q1</u> [D] <u>2</u>	<u>46</u>
<u>46</u>	Electron screening effect in the reactions ${}^3\text{He}(d,p){}^4\text{He}$ and $d({}^3\text{He},p){}^4\text{He}$ Aliotta, M.; Raiola, F.; Gyurky, G.; Formicola, A.; Bonetti, R.; Broggin, C.; Campajola, L.; Corvisiero, P.; Costantini, H.; D'Onofrio, A.; Fulop, Z.; Gervino, G.; Gialanella, L.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Moroni, P.G.; Ordine, A.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. Nuclear Physics A, Volume 690, Issue 4, p. 790-800 (2001)	<u>1.959</u>	<u>9/20 Q3</u> [A] <u>1.2</u>	<u>32</u>
<u>37</u>	The E1 capture amplitude in ${}^{12}\text{C}(\alpha,\gamma_0){}^{16}\text{O}$ Gialanella, L.; Rogalla, D.; Strieder, F.; Theis, S.; Gyurki, G.; Agodi, C.; Alba, R.; Aliotta, M.; Campajola, L.; Del Zoppo, A.; D'Onofrio, A.; Figuera, P.; Greife, U.; Imbriani, G. ; Ordine, A.; Roca, V.; Rolfs, C.; Romano, M.; Sabbarese, C.; Sapienza, P.; Schuemann, F.; Somorjai, E.; Terrasi, F.; Trautvetter, H. P. The European Physical Journal A, Volume 11, Issue 3, pp. 357-370 (2001)	<u>2.015</u>	<u>8/20 Q2</u> [A] <u>1.6</u>	<u>19</u>
<u>48</u>	Stopping power of low-energy deuterons in ${}^3\text{He}$ gas Raiola, F.; Gyurky, G.; Aliotta, M.; Formicola, A.; Bonetti, R.; Broggin, C.; Campajola, L.; Corvisiero, P.; Costantini, H.; D'Onofrio, A.; Fulop, Z.; Gervino, G.; Gialanella, L.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Kavanagh, R. W.; Moroni, P. G. P.; Ordine, A.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. The European Physical Journal A, Volume 10, Issue 4, pp. 487-491 (2001)	<u>2.015</u>	<u>8/20 Q2</u> [A] <u>1.6</u>	<u>8</u>
<u>49</u>	Energy loss of deuterons in ${}^3\text{He}$ gas: a threshold effect Formicola, A.; Aliotta, M.; Gyurky, G.; Raiola, F.; Bonetti, R.; Broggin, C.; Campajola, L.; Corvisiero, P.; Costantini, H.; D'Onofrio, A.; Fulop, Z.; Gervino, G.; Gialanella, L.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Ordine, A.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. The European Physical Journal A, Volume 8, Issue 4, pp. 443-446 (2000)	<u>2.015</u>	<u>8/20 Q2</u> [A] <u>1.6</u>	<u>19</u>
<u>50</u>	Stopping power, electron screening and the astrophysical S(E) factor of $d({}^3\text{He},p){}^4\text{He}$ Costantini, H.; Formicola, A.; Junker, M.; Bonetti, R.; Broggin, C.; Campajola, L.; Corvisiero, P.; D'Onofrio, A.; Fubini, A.; Gervino, G.; Gialanella, L.; Greife, U.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Ordine, A.; Prada Moroni, P. G.; Prati, P.; Roca, V.; Rogalla, D.; Rolfs, C.; Romano, M.; Schuemann, F.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. Physics Letters B, Volume 482, Issue 1-3, p. 43-49 (2000)	<u>4.034</u>	<u>7/68 Q1</u> [A] <u>2</u>	<u>27</u>

51	Direct measurement of the absolute cross section of $p(^7\text{Be},\gamma)$ Terrasi, F.; Gialanella, L.; Imbriani, G. ; Strieder, F.; Campajola, L.; D'Onofrio, A.; Greife, U.; Gyurky, G.; Lubritto, C.; Ordine, A.; Roca, V.; Rolfs, C.; Romano, M.; Rogalla, D.; Sabbarese, C.; Somorjai, E.; Trautvetter, H. P. Nuclear Physics A, Volume 688, Issue 1-2, p. 539-542 (2001)	1.959	9/20 Q3 [A] 1.2	4
52	A new measurement of the E1 amplitude in $^{12}\text{C}(\alpha,\gamma_0)^{16}\text{O}$ Gialanella, L.; Aliotta, M.; Rogalla, D.; Rolfs, C.; Schuemann, F.; Strieder, F.; Theis, S.; Trautvetter, H. P.; Campajola, L.; Imbriani, G. ; Roca, V.; Romano, M.; D'Onofrio, A.; Sabbarese, C.; Terrasi, F.; Agodi, C.; Alba, R.; Del Zoppo, A.; Figuera, P.; Sapienza, P.; Spitaleri, C.; Gyurky, G.; Somorjai, E.; Greife, U. Nuclear Physics A, Volume 688, Issue 1-2, p. 254-258 (2001)	1.959	9/20 Q3 [A] 1.2	
53	Influence of the $^{12}\text{C}(\alpha,\gamma)^{16}\text{O}$ reaction rate on the evolution of a $15 M_{\text{solar}}$ star Imbriani, G. ; Straniero, O.; Terrasi, F.; Limongi, M.; Chieffi, A. Nuclear Physics A, Volume 688, Issue 1-2, p. 249-253 (2001)	1.959	9/20 Q3 [A] 1.2	1
54	Recoil separator ERNA: improved measurements of the astrophysical key reaction $^{12}\text{C}(\alpha,\gamma)^{16}\text{O}$ D. Rogalla, M. Aliotta, C. A. Barnes, L. Campajola, A. D'Onofrio, L. Gialanella, U. Greife, G. Imbriani , A. Ordine, V. Roca, C. Rolfs, M. Romano, C. Sabbarese, D. Schürmann, F. Schümann, F. Strieder, S. Theis, F. Terrasi and H. P. Trautvetter Nuclear Physics A, Volume 688, Issue 1-2, p. 549-551	1.959	9/20 Q3 [A] 1.2	1
55	The $\text{D}(^3\text{He},p)^4\text{He}$ fusion reaction: electron screening effect and astrophysical S(E) factor at low energies S. Zavatarelli, P. Corvisiero, H. Costantini, P. G. Prada Moroni, P. Prati, R. Bonetti, A. Guglielmetti, C. Broggini, L. Campajola, A. Formicola, L. Gialanella, G. Imbriani, A. Ordine, V. Roca, M. Romano, A. D'Onofrio, F. Terrasi, G. Gervino, C. Gustavino, M. Junker, D. Rogalla, C. Rolfs, F. Schumann, F. Strieder and H. P. Trautvetter Nuclear Physics A, Volume 688, Issue 1-2, p. 514-517	1.959	9/20 Q3 [A] 1.2	2
56	Absolute cross section of $p(^7\text{Be},\gamma)^8\text{B}$ using a novel approach Gialanella, L.; Strieder, F.; Campajola, L.; D'Onofrio, A.; Greife, U.; Gyurky, G.; Imbriani, G.; Oliviero, G.; Ordine, A.; Roca, V.; Rolfs, C.; Romano, M.; Rogalla, D.; Sabbarese, C.; Somorjai, E.; Terrasi, F.; Trautvetter, H. P. The European Physical Journal A, Volume 7, Issue 3, pp. 303-305 (2000)	2.015	8/20 Q2 [A] 1.6	22
57	Recoil separator ERNA: ion beam purification Rogalla, D.; Theis, S.; Campajola, L.; D'Onofrio, A.; Gialanella, L.; Greife, U.; Imbriani, G. ; Ordine, A.; Roca, V.; Rolfs, C.; Romano, M.; Sabbarese, C.; Schuemann, F.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. Nuclear Instruments and Methods in Physics Research Section A, Volume 437, Issue 2-3, p. 266-273 (1999)	1.019	8/30 Q2 [C] 1.6	20
58	First Measurement of the $^3\text{He}(^3\text{He},2p)^4\text{He}$ Cross Section down to the Lower Edge of the Solar Gamow Peak Bonetti, R.; Broggini, C.; Campajola, L.; Corvisiero, P.; D'Alessandro, A.; Dessalvi, M.; D'Onofrio, A.; Fubini, A.; Gervino, G.; Gialanella, L.; Greife, U.; Guglielmetti, A.; Gustavino, C.; Imbriani, G. ; Junker, M.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Schuemann, F.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Zavatarelli, S. Physical Review Letters, Volume 82, Issue 26, June 28, 1999, pp.5205-5208	7.180	5/68 Q1 [B] 2	99
59	Recoil separator ERNA: ion beam specifications Rogalla, D.; Aliotta, M.; Barnes, C. A.; Campajola, L.; D'Onofrio, A.; Fritz, E.; Gialanella, L.; Greife, U.; Imbriani, G. ; Ordine, A.; Ossmann, J.; Roca, V.; Rolfs, C.;	2.015	8/20 Q2 [A]	20

	Romano, M.; Sabbarese, C.; Schuermann, D.; Schuemann, F.; Strieder, F.; Theis, S.; Terrasi, F.; Trautvetter, H. P. The European Physical Journal A, Volume 6, Issue 4, pp. 471-477 (1999)		<u>1.6</u>	
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	PUBLICATIONS ON INTERNATIONAL REFEREED JOURNALS FIRST/LAST (MAIN) AUTHOR	LF.	Rel.	Cit.
<u>1</u>	Recent results and prospective of the LUNA experiment Imbriani, G. Progress in Particle and Nuclear Physics, v. 59, iss. 1, p. 193-195 (2007)	<u>3.860</u>	<u>3/20</u> <u>Q1</u> <u>[A]</u> <u>2</u>	
<u>2</u>	S-factor of $^{14}\text{N}(p,\gamma)^{15}\text{O}$ at astrophysical energies Imbriani, G. ; Costantini, H.; Formicola, A.; Vomiero, A.; Angulo, C.; Bemmerer, D.; Bonetti, R.; Brogгинi, C.; Confortola, F.; Corvisiero, P.; Cruz, J.; Descouvemont, P.; Fulop, Z.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, Gy.; Jesus, A. P.; Junker, M.; Klug, J. N.; Lemut, A.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Rossi-Alvarez, C.; Schuemann, F.; Schuermann, D.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P. The European Physical Journal A, Volume 25, Issue 3, pp.455-466 (2005)	<u>2.015</u>	<u>8/20</u> <u>Q2</u> <u>[A]</u> <u>1.6</u>	<u>33</u>
<u>3</u>	Astrophysical S-factor of $^{14}\text{N}(p,\gamma)^{15}\text{O}$ Formicola, A.; Imbriani, G. ; Costantini, H.; Angulo, C.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Cruz, J.; Descouvemont, P.; Fulop, Z.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, G.; Jesus, A. P.; Junker, M.; Lemut, A.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Vomiero, A.; Zavatarelli, S. Physics Letters B, Volume 591, Issue 1-2, p. 61-68(2004)	<u>4.034</u>	<u>7/68</u> <u>Q1</u> <u>[A]</u> <u>2</u>	<u>100</u>
<u>4</u>	Evolution and Nucleosynthesis of Primordial Low-Mass Stars Picardi, I.; Chieffi, A.; Limongi, M.; Pisanti, O.; Miele, G.; Mangano, G.; Imbriani, G. The Astrophysical Journal, Volume 609, Issue 2, pp. 1035-1044 (2004)	<u>6.331</u>	<u>6/48</u> <u>Q1</u> <u>[D]</u> <u>2</u>	<u>18</u>
<u>5</u>	The bottleneck of CNO burning and the age of Globular Clusters Imbriani, G. ; Costantini, H.; Formicola, A.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Corvisiero, P.; Cruz, J.; Fulop, Z.; Gervino, G.; Guglielmetti, A.; Gustavino, C.; Gyurky, G.; Jesus, A. P.; Junker, M.; Lemut, A.; Menegazzo, R.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; Rossi Alvarez, C.; Schuemann, F.; Somorjai, E.; Straniero, O.; Strieder, F.; Terrasi, F.; Trautvetter, H. P.; Vomiero, A.; Zavatarelli, S. Astronomy and Astrophysics, v.420, p.625-629 (2004)	<u>4.153</u>	<u>11/4</u> <u>8</u> <u>Q2</u> <u>[D]</u> <u>1.6</u>	<u>46</u>
<u>6</u>	The LUNA II 400kV accelerator Formicola, A.; Imbriani, G. ; Junker, M.; Bemmerer, D.; Bonetti, R.; Broggini, C.; Casella, C.; Corvisiero, P.; Costantini, H.; Gervino, G.; Gustavino, C.; Lemut, A.; Prati, P.; Roca, V.; Rolfs, C.; Romano, M.; SchÄ¼rmann, D.; Strieder, F.; Terrasi, F.; Trautvetter, H.-P.; Zavatarelli, S. Nuclear Instruments and Methods in Physics Research Section A, Volume 507, Issue 3, p. 609-616 (2003)	<u>1.019</u>	<u>8/30</u> <u>Q2</u> <u>[C]</u> <u>1.6</u>	<u>40</u>
<u>7</u>	Charge state studies of low energy heavy ions passing through hydrogen and helium gas Liu, W.; Imbriani, G. ; Buchmann, L.; Chen, A. A.; D'Auria, J. M.; D'Onofrio, A.; Engel, S.; Gialanella, L.; Greife, U.; Hunter, D.; Hussein, A.; Hutcheon, D. A.; Olin, A.; Ottewell, D.; Rogalla, D.; Rogers, J.; Romano, M.; Roy, G.; Terrasi, F. Nuclear Instruments and Methods in Physics Research Section A, Volume 496, Issue 1, p. 198-214 (2003)	<u>1.019</u>	<u>8/30</u> <u>Q2</u> <u>[C]</u> <u>1.6</u>	<u>13</u>

8	<p>The $^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$ Reaction Rate and the Evolution of Stars in the Mass Range $0.8 \leq M/M_{\text{solar}} \leq 25$</p> <p>Imbriani, G.; Limongi, M.; Gialanella, L.; Terrasi, F.; Straniero, O.; Chieffi, A. The Astrophysical Journal, Volume 558, Issue 2, pp. 903-915 (2001)</p>	<u>6.331</u>	<u>6/48</u> <u>Q1</u> <u>[D]</u> <u>2</u>	<u>46</u>
9	<p>Influence of the $^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$ reaction rate on the evolution of a $15 M_{\text{solar}}$ star</p> <p>Imbriani, G.; Straniero, O.; Terrasi, F.; Limongi, M.; Chieffi, A. Nuclear Physics A, Volume 688, Issue 1-2, p. 249-253 (2001)</p>	<u>1.959</u>	<u>9/20</u> <u>Q3</u> <u>[A]</u> <u>1.2</u>	<u>1</u>