



CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date 11/12/2021

First name	Miguel Ángel		
Family name	Aloy Torás		
Gender (*)	Male	Birth date	04/03/1972
Social Security, Passport, ID number	22566499A		
e-mail	Miguel.a.aloy@uv.es	URL Web	http://www.uv.es/aloy
Open Researcher and Contributor ID (ORCID)	0000-0002-5552-7681		

A.1. Current position

Position	Catedrático de Universidad / Full Professor of Astrophysics		
Initial date	2020		
Institution	Universitat de València (UV)		
Department/Center	Astronomy and Astrophysics / Faculty of Physics		
Country	Spain	Phone number	+34963543080
Key words	Astrophysics; Supernova; Physics astrophysics-Stars; Gamma ray explosions; Numerical simulation		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
2011 - 2020	Associate Professor – Profesor Titular de Universidad / UV / Spain
2010 - 2011	Técnico Especialista en Procesos de Investigación / Fundació General UV
2005 - 2010	Ramón y Cajal Researcher / UV / Spain
2003 - 2005	Postdoctoral Contract BATIla / Max-Planck-Institut für Astrophysik / Germany
2001 - 2002	Marie Curie Individual Fellow / Max-Planck-Institut für Astrophysik / Germany
2000 - 2000	Postdoc fellow (MEC) / Max-Planck-Institut für Astrophysik / Germany
2000 - 2000	Guest Scientist / Max-Planck-Institut für Astrophysik / Germany
1996 - 2000	Doctoral fellow (GVA) / Departamento de Astronomía y Astrofísica / UV

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Ph.D. in Physical Sciences	Universitat de València / Spain	1999
Licensed in Physical Sciences	Universitat de València / Spain	1995

Part B. CV SUMMARY (max. 5000 characters, including spaces)

Full Professor of Astrophysics at the University of Valencia (UV). Aloy developed his early postdoctoral career over five years at the Max Planck Institut für Astrophysik (MPA; Germany). He has been uninterruptedly funded by extremely competitive international programs (success rate $\leq 10\%$).

Bibliometric data: **h-index=52** (NASA/ADS), >13500 citations, **190 publications** (121 refereed; 37 first author; **115 Q1**). Publication list: <https://bit.ly/AloyPubList>

Aloy has given 15 invited research seminars in national and international centers and 147 participations (**41 invited**) in international scientific congresses, and has been part of the organizing and scientific committees of various international congresses. He has participated in research

projects funded by the Spanish Government (projects of the National Plan AYA 2001, 2004, 2007, 2010, 2013, 2015 **-IP-**, 2018) and the project CONSOLIDER2007-00050 (of which he has been coordinator of the Astrophysics and Cosmology groups from 2011 to 2013), the German Government (SFB 375, SFB/TR-7), the Generalitat Valenciana (GVPROMETEO2009-103, PROMETEOII / 2014-069), and the European Union (HPRN- CT-2000- 00137). Aloy was awarded with an **ERC Starting Independent Researcher Grant** in the 2010 call (StG-ERC-259276-CAMAP; Mar. 2011- Feb. 2017), where the success rate was $\lesssim 17\%$ for applications in Physical Sciences. He obtained >25 mio hours of computing time from the Spanish Supercomputing Network (RES; last 10 years). Aloy, applied together with Profs. H.-Th. Janka, T. Foglizzo and G. Meynet to an **ERC Synergy Grant** (ERC-2019-SyG-856588-STARBLASTS). The team passed all evaluation phases, but not having obtained funding (we were left on the reserve list) due to having fallen just below the threshold for funding. Aloy is a **member of the Virgo scientific collaboration** since January 2017. He is also member of the Spanish Astronomical Society (since 1997) and of the IAU (since 2018). Multidisciplinary research: Aloy has applied the know-how acquired in the research on compact relativistic objects to the study of the mechanical properties of the human eye (ASTROEYE project, financed by the Spanish MINECO - SAF2013-49284-EXP).

INSTITUTIONAL RESPONSIBILITIES

2021 – : Research Committee Member of the UV
2021 – : Users Committee Head of the RES - Member since 2015
2020 – : **Committee for Supercomputing Infrastructure Head**, UV - Member since 2017
2015 : Committee Member for Curriculum Elaboration of the Master in Data Science, UV
2014-18: Academic Committee Member of the Telecommunications Engineering Degrees, UV
2011-13: Astrophysics and Cosmology group Coordinator of the project “Consolider: Supercomputing and e-Science”

REVIEWING ACTIVITIES

2021 : Agencia Estatal de Investigación, Spain – Scientific Evaluator (SE)
2016/18: Agencia Nacional de Evaluación y Prospectiva (ANEP), Spain – SE
2016-17: Partnership for Advanced Computing in Europe (PRACE), EU – SE
2011/16: PRACE, EU – Prioritization panel member (PPM)
2010 : Greek system of Higher Education, Research and Innovation, Greece – SE
2007 : Centres of Excellence, KUL, Belgium – SE
2007 : Agence Nationale de la Recherche (ANR), France – SE
2004 – : Reviewer of the Astronomy and Astrophysics Journal (x4), The Astrophysical Journal (x12), Classic and Quantum Gravity journal (x1), The Monthly Notices of the Astronomical Society (x6), Reports on Progress in Physics journal (x1), Journal of Computational Physics (x2), Computation Astrophysics and Cosmology journal (x1), New Astronomy journal (x1).

SUPERVISION OF STUDENTS

2008-19: 6 Postdocs, **5 PhD**, 6 Master students. DAA, University of Valencia, Spain
2001-07: **3 PhD**, 3 Master Students (co-supervision). MPA, Germany

SCIENTIFIC HITS

1. First numerical simulations of 3D relativistic hydrodynamic AGN jets.
2. Showing that a relativistic jet can make its way through a massive star with properties at breakout compatible with GRB observations.
3. Proving neutron star mergers can produce a relativistic and collimated GRB-jets.
4. First 3D MHD models of supernovae including sophisticated neutrino transport.
5. Computing the evolution of magnetized ultrarelativistic ejecta explaining the early afterglow evolution of a GRB.
6. Developing the first spectral evolution solver coupled to relativistic-MHD simulations with applications to pc-scale jets, GRB afterglows, and TDEs.
7. Participation in the discovery of the first electromagnetic counterpart of a gravitational wave source (GRB170817A/GW170817).

8. Theoretical interpretation of the Christmas Burst (GRB101225A) – Nature paper.
9. Developing a new, massively parallel method for the solution of elliptic PDEs.
10. Theoretical interpretation of the first detection of a TDE with a resolved radio jet in a galaxy merger – Science paper.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

1. **Scientific paper.** Aloy, M.Á. (CA); Obergaulinger, M.(1/2). 2021. [Magnetorotational core collapse of possible GRB progenitors - II. Formation of protomagnetars and collapsars](#) MNRAS. 500, 4365. ADS citations (16)
2. **Scientific paper.** Obergaulinger, M.; Aloy, M.Á (CA).(2/2). 2021. [Magnetorotational core collapse of possible GRB progenitors - III. Three-dimensional models](#), MNRAS. 503, 4942. ADS citations (18)
3. **Scientific paper.** Obergaulinger, M; Aloy, M.Á. (CA) (2/2). 2020. [Magnetorotational core collapse of possible GRB progenitors - I. Explosion mechanisms](#) MNRAS. 492, 4613. ADS citations (40)
4. **Scientific paper.** Aloy, M.A. (CA); Ibáñez, J.M.; Sanchis-Gual, N.; Obergaulinger, M.; Font, J.A.; Serna, S.; Marquina, A.(1/7). 2019. [Neutron star collapse and gravitational waves with a non-convex equation of state](#) MNRAS. 484, 4980. ADS citations (22)
5. **Scientific paper.** Abbott, B. P.; et al (including Aloy, M.A.). (24/ 1156). 2017. [Gravitational Waves and Gamma-Rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A](#) ApJL. 848, L13. ADS citations (1794)
6. **Scientific paper.** Obergaulinger M; Aloy MA (AC). (2/2). 2017. [Protomagnetar and black hole formation in high-mass stars](#) MNRAS: Letters. 469, L43. ADS citations (61)
7. **Scientific paper.** Mattila, S.; Pérez-Torres, M.; Efstathiou, A.; et al; Aloy, M.Á.; Östlin, G.(8/36). 2018. [A dust-enshrouded tidal disruption event with a resolved radio jet in a galaxy merger](#) Science. 361, pp.482-485. ADS (66)
8. **Scientific paper.** Obergaulinger, M.; Janka, H.-Th.; Aloy, M.A. (AC). (3/3). 2014. [Magnetic field amplification and magnetically supported explosions of collapsing, non-rotating stellar cores](#) MNRAS. 445, 3169. ADS citations (72)
9. **Scientific paper.** Thöne, C.C.; et al (including Aloy M.A.) (6/34). 2011. [The unusual gamma-ray burst GRB 101225A from a helium star/neutron star merger at redshift 0.33](#) Nature. 480, 72. ADS citations (97)
10. **Scientific paper.** Rezzolla, L.; Giacomazzo, B.; Baiotti, L.; Granot, J.; Kouveliotou, C.; Aloy, M.A.(6/6). 2011. [The Missing Link: Merging Neutron Stars Naturally Produce Jet-like Structures and Can Power Short Gamma-ray Bursts](#) ApJL. 732, L6. ADS citations (356)

C.2. Congress

1. Aloy, M.Á.. *Assessing the dependence of magnetic fields and rotation of massive stars in the properties of their compact remnants*. Computational Challenges in Multi-Messenger Astrophysics. 06/10/2021. IPAM - USA. Participatory - **invited/keynote talk**. Conference.
2. Aloy, M.Á.. *On the dependence of magnetic fields and rotation of massive stars in the properties of their compact remnants*. 16th Marcel Grossmann Meeting. Virtual Meeting. 08/07/2021. Spain. Participatory - **invited/keynote talk**. Conference.
3. Aloy, M. A.; Cuesta-Martínez, C.; Mimica, P.. *Black body dominated GRBs*. 14th Marcel Grossmann Meeting. Università degli Studi di Roma (La Sapienza). 16/07/2015. Italy. Participatory - **invited/keynote talk**. Conference.
4. Aloy, M.Á.. *The formation of the central engine of long GRBs and of relativistic outflows*. Gamma-ray bursts and supernovae: from the central engine to the observer. CEA/Saclay. 18/07/2018. France. Participatory - **invited/keynote talk**. Conference.
5. Aloy, M.Á.; Cordero-Carrión, I.. *Minimally implicit Runge-Kutta methods for Resistive Relativistic MHD*. 10th Annual International Conference on Numerical Modeling of Space

- Plasma Flows, ASTRONUM-2015. Maison de la Simulation (CEA/CNRS/Inria/UPS). 11/06/2015. Avignon France. Participatory - **invited/keynote talk**. Conference.
6. Aloy, M.A.. *GRB Jets*. GRB workshop 2015. RIKEN. 01/09/2015. Japan. Participatory - **invited/keynote talk**. Conference.
 7. Aloy, M. A.. *Gravitational Wave Signals in Black-Hole-Forming Core Collapse*. Numerical modeling of space plasma flows (ASTRONUM-2014). CSPAR (U. of Alabama in Huntsville) and the LRFLU French CEA. 26/06/2014. Long Beach USA. Participatory - **invited/keynote talk**. Conference.
 8. Aloy M. Á. *Gamma-ray burst jets*. East Asia Numerical Astrophysics Meeting, Kyoto, Japan. 30/10/2012. Japan. Participatory - **invited/keynote talk**. Conference.
 9. Aloy M.A.. *The growth of magnetic fields in progenitors of gamma-ray bursts*. Reunión Científica de la Sociedad Española de Astronomía 2012. 13/07/2012. Spain. Participatory - **invited/keynote talk**. Conference.
 10. Aloy M. A.; et al.. *Powering Short GRBs by Mergers of Moderately Magnetized Neutron Stars*. Numerical modeling of space plasma flows (ASTRONUM 2011). 17/06/2011. Spain. Participatory - **invited/keynote talk**. Conference.

C.3. Research projects

1. **Project**. Astrofísica, Relatividad y Cosmología Computacional (IDIFEDER/2021/086). Generalitat Valenciana. Vicent Quilis Quilis. (Universitat de València). 01/01/2021-31/12/2023. 500.000 €. **co-PI**.
2. **Project**. Astrofísica Relativista, Cosmología Computacional y Astronomía de Ondas Gravitatorias (PROMETEU/2019/071). Generalitat Valenciana. José Antonio Font Roda. (Universitat de València). 01/01/2019-31/12/2022. 274.553 €. Research team member.
3. **Project**. Astrofísica Relativista Computacional (PGC2018-095984-B-I00). Ministerio de Ciencia, Innovación y Universidades. José Antonio Font Roda. (Universitat de València). 01/01/2019-31/12/2021. 229.900 €. Research team member.
4. **Project**. STARBLASTS: Death of Massive Stars and Birth of Neutron Stars in the Multi-messenger Era. Prof. Aloy, applied together with Profs. Janka, Foglizzo and Meynet to an ERC Synergy Grant (ERC-2019-SyG; 856588-STARBLASTS). *The team passed all evaluation phases, but not having obtained funding*. ERC. Miguel Angel Aloy. (Universitat de València). 10/09/2019-10/09/2019. (not financed) €. **Co-PI**.
5. **Project**. Astrofísica, Relatividad y Cosmología Computacional (IDIFEDER/2018/063). Generalitat Valenciana. José María Ibáñez Cabanell. (Universitat de València). 20/11/2018-20/11/2020. 850.000 €. **co-PI**.
6. **Project**. Astrofísica Relativista Computacional (AYA2015-66899-C2-1-P). Ministerio de Economía y Competitividad. **Miguel Á. Aloy** / José Antonio Font Roda. (Universitat de València). 01/01/2016-31/12/2018. 284.200 €. **PI**.
7. **Project**. Acortando distancias entre la astrofísica y el ojo humano (SAF2013-49284-EXP). Ministerio de Economía y Competitividad. Robert Montés Micó / **Miguel Ángel Aloy Torás**. (Universitat de València). 01/01/2015-31/12/2016. 64.000 €. **Co-IP**.
8. **Project**. Astrofísica Relativista Computacional (PROMETEU/2014/069). Generalitat Valenciana. José María Ibáñez. Cabanell. (Universitat de València). 01/01/2014-31/12/2016. 51.780 €. Research team member.
9. **Project**. [Starting Independent Researcher Grant](#): 'CAMAP: Computer Aided Modeling of Astrophysical Plasma' (StG-ERC-259276-CAMAP). European Research Council. Miguel Angel Aloy Toras. (Universitat de València). 01/03/2011-28/02/2016. 1.497.000 €. **PI**.
10. **Project**. Astrofísica Relativista Computacional (AYA2010-21097-C03-01). José María Ibáñez. (Universitat de València). 01/01/2011-31/12/2013. 280.000 €. Research team member.