

Curriculum Vitae – Anna Lisa Varri

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Theoretical astrophysics • Stellar dynamics • Star clusters • Kinematic complexity • Gravitational N-body problem

Positions

11/2018 - 11/2020	Japan Society for the Promotion of Science International Fellow Department of Astronomy, University of Tokyo, JP (host) and University of Edinburgh, UK
10/2015 - 10/2018	Marie Skłodowska-Curie Fellow (2015-2017), then Postdoctoral Research Associate Institute for Astronomy, University of Edinburgh, UK
09/2012 - 09/2015	Royal Commission for the Exhibition of 1851 Fellow School of Mathematics, University of Edinburgh, UK (2012-13 <i>in absentia</i>)
08/2012 - 08/2013	International Astronomical Union - The Gruber Foundation Fellow Department of Astronomy, Indiana University, Bloomington, IN, USA

Education

Department of Physics, Università degli Studi di Milano, IT – Supervisor: G. Bertin	
01/2009 - 07/2012	Ph.D. in Theoretical astrophysics – Thesis: “Dynamics of globular clusters”
10/2005 - 04/2008	Master’s degree in Theoretical physics, with highest honours (110/110 <i>cum laude</i>)
10/2002 - 10/2005	Bachelor’s degree in Physics, with highest honours (110/110 <i>cum laude</i>)

Fellowships and awards

2018	Japan Society for the Promotion of Science International Fellowship, with nomination by the Royal Society
2015	Marie Skłodowska-Curie Individual European Fellowship
2012	Royal Commission for the Exhibition of 1851 Research Fellowship The Gruber Foundation Young Scientist Award, with nomination by the International Astronomical Union Finalist (Top 10 over 300+) - L’Oréal Italia-UNESCO for Women in Science Award European Space Agency Research Fellowship in Space Science (declined)
2011	“Angelo Della Riccia” National Fellowship for Theoretical and Particle Physics Drexel International Award for faculty and doctoral candidates
2010	US-Italy Fulbright Fellowship

Invited visiting positions

2018	Institut d’Astrophysique de Paris (Lagrange Visitor)	Paris, FR
2018	Johns Hopkins University, Department of Physics & Astronomy (TIPAC Visitor)	Baltimore, USA
2017	Institute for Advanced Studies, School of Natural Sciences (IAS Visitor)	Princeton, USA
2015	Max Planck Institute fuer Astronomie (SFB Summer Visitor)	Heidelberg, DE
2014	Kavli Summer Program in Astrophysics (KSPA, frm. ISIMA): “ <u>Gravitational Dynamics</u> ”	CITA, Toronto, CA
2012	Cambridge University, Institute of Astronomy (IoA Summer Visitor)	Cambridge, UK
2010	Drexel University, Department of Physics (Fulbright Graduate Researcher, 1 year)	Philadelphia, USA
2009	Kavli Inst. for Theoretical Physics Program: “ <u>Formation and Evolution of Globular Clusters</u> ”	Santa Barbara, USA

Funding history

2018 - 2020	PI	Grant-in-Aid for Scientific Research (KAKENHI) for Foreign Researchers, JSPS	1,800,000 JPY
2018 - 2020	PI	Research Fellowship Grant, Japan Society for the Promotion of Science (JSPS) “The nexus between kinematic complexity and black holes in star clusters”	8,888,000 JPY
2017 - 2019	Co-I	Alumni Follow-on Grant, Royal Society (PI: A. Zocchi; £6k awarded annually)	12,000 GBP
2017 - 2018	Co-I	International Team Grant, ISSI Bern (PIs: V. Hénault-Brunet, M. Gieles)	~20,000 CHF
2016 - 2019	Science Advisor	Research Project Grant, Leverhulme Trust (RPG-2015-408; PI: D. C. Heggie) “New science from the phase space of dense stellar systems” <i>Salary for 3-year PDRA (P. Breen), research budget for PI, PDRA, two USA Co-Is</i>	174,630 GBP
2016 - 2017	PI	Research Incentive Grant, Carnegie Trust for the Universities of Scotland “Globular clusters in the era of precision astrometry: getting ready for Gaia” <i>Salary and travel budget for short-term PDRA (A. Zocchi)</i>	6,768 GBP
2015 - 2017	PI	Marie Skłodowska-Curie Grant (MSCA-IF-EF-RI 658088), EU Commission “NESSY: NEw science from the phase space of dense Stellar SYstems”	183,455 EUR
2015	Co-I	Visitors to Scotland Grant, Royal Society of Edinburgh (PI: D. C. Heggie)	900 GBP
2012 - 2015	PI	Research Fellowship Grant, 1851 Royal Commission “Towards a new dynamical paradigm for globular star clusters”	102,000 GBP
2012 - 2014	Co-I	PRIN 2010, MIUR (National PI: F. Matteucci; Unit PI: G. Bertin)	798,700 EUR
2012 - 2013	PI	Research Fellowship Grant, The Gruber Foundation “Towards a new dynamical paradigm for globular star clusters”	50,000 USD
2012	PI	Research Grant, Angelo Della Riccia Foundation	3,600 EUR
2011	PI	International travel grants, Drexel University	1,000 USD
2010 - 2012	Co-I	PRIN 2008, MIUR (National PI: L. Ciotti; Unit PI: M. Lombardi)	42,902 EUR
2010 - 2011	PI	Fellowship and Travel Grant, US-Italy Fulbright Commission	11,500 USD
2009 - 2012	PI	Ph.D. Fellowship, Ministry of Education, Universities and Research (MIUR)	40,910 EUR

Summary of publications

Publications (total):	47	Refereed articles (1 under review):	30
Publications (1st author; as 1st advisor):	11, 18	Refereed articles (1st; 2nd; 3rd author):	4, 6, 10
Conference papers (total; 1st author):	15, 6	Refereed articles (as 1st, 2nd advisor):	12, 5
Invited reviews (1st author):	2	Refereed articles (after PhD; with ≤ 5 authors):	24, 21
ORCID: orcid.org/0000-0002-6162-1594		SCOPUS Author ID: 25931240600	

International scientific collaborations

Member: Univ. Tokyo, Computational Astrophysics Group (PI: M. S. Fujii); JMLab (PI: J. Makino, Kobe+).

Affiliate Member: Univ. Edinburgh, School of Mathematics, Applied and Computational Maths Group (2013+, main collaborators: D. C. Hoggie, P. G. Breen); Institute for Astronomy: Stellar Populations Group (2015+, PI: A. M. N. Ferguson), Edinburgh Centre for Computational Astrophysics (2013+; main collaborators: J. Penarrubia, S. Khochfar).

Collaborator: several groups active in observational (e.g., Cosmic-Lab, Bologna; Galactic Group, Indiana; HSTPROMO, STScI) and theoretical (e.g., Astrophysics, Surrey; Galaxy Dynamics, ESO&MPIA; Gravitational Dynamics, IAP Paris; Theoretical Astrophysics, Milano; Stellar Dynamics, Drexel) studies of resolved stellar systems.

2018+ Contributor	<u>MAVIS</u> - MCAO Assisted Visible Imager and Spectrograph (PIs: F. Rigaut, R. McDermid) <i>Instrument concept for ESO VLT Adaptive Optics Facility - Crowded field astrometry science case</i>
2018+ Core member	<u>MIKIS survey</u> - ESO Multi-Instrument Kinematic Survey of Galactic Globular Clusters (PI: F. Ferraro)
2015+ Member	<u>Gaia-ESO survey</u> - <i>Galactic spectroscopic survey complementing Gaia</i> (PIs: G. Gilmore, S. Randich)
2013+ Member	<u>MODEST</u> - Modeling and Observing DEense STellar systems
2012+ Core member	<u>[GC]² Team</u> , formerly "Gaia Challenge - Collisional Systems"

Observing time

Leading theorist Co-Investigator, for all programmes.

2019	UT2/FLAMES (PI: M. Gieles, 0102.D-0164)	14.8 hours
2018	HAWK-I/GRAAL (PI: E. Dalessandro, Science Verification proposal 60.A-9467A)	1.7 hours
2017	HST (PI: F. R. Ferraro, Cycle 25, GO15232)	16 Orbits
2014	UT4/SINFONI, (PI: F. R. Ferraro, 195.D-0750)	Large Program
2013	UT2/FLAMES, (PI: A. Zocchi, 093.D-0628)	18.0 hours
	WIYN 0.9m/MOSAIC, (PI: E. Friel, 13A-0806)	6 nights
	WIYN 3.5m/pODI, (PI: E. Friel, 13A-0562)	2 nights
2012	UT3-Melipal/VIMOS, (PI: A. Zocchi, 091.D-0610)	11.1 hours

Research supervision experience

Since 2009: 2 PDRA activities, 3 PhD theses, 3 MSc theses, 4 + 5 postgrad projects, 2 BSc theses, 2 undergrad projects.

Daggers denote the number of joint refereed publications (co/led by the advisee) resulted from co/supervised activities.

Postdoctoral activities: • Philip Breen † (2016 - 2019, with D. C. Hoggie) • Alice Zocchi † (2016; 2018)

PhD theses: • Frederika Phipps (2018 - , with S. Khochfar) • Ian Claydon (2015 - , with M. Gieles) • Maria Tiongco ††† (2012 - 2018, with E. Vesperini, Several awards, incl. 2016 AAS Duncombe Prize for Dynamics)

MSc theses: • Sarah Heinzlmann (2017 - 2018, with S. Khochfar) • Paolo Bianchini †† (2011 - 2012, with G. Bertin) • Alice Zocchi †† (2009 - 2010, with G. Bertin)

Postgraduate projects: • Simon Rozier (2018 - , with C. Pichon, J. B. Fouvy) • Kathryn Daniel † (2014 - 2016, with D. C. Hoggie) • Ben Bar-Or (2014 - 2015, with D. C. Hoggie) • Filippo Contenta † (2014 - 2015, with D. C. Hoggie)

Postgraduate projects (secondary supervision): • Paolo Bianchini †† (2015 - 2016, with G. van de Ven; 2014, with F. Renaud) • Maxwell Cai † (2014 - 2015, with M. Gieles, D. C. Hoggie) • Rosemary Shanahan (2014, with M. Gieles) • Maria Cordero † (2012 - 2013, with C. Pilachowski) • Owen Boberg † (2012 - 2013, with E. Friel)

BSc theses: • Catherine Gosmeyer (2012 - 2013, with E. Vesperini, IU Alumni Award for Overall Academic Excellence '12) • Paolo Bianchini (2009, with G. Bertin)

Undergraduate projects: • Anna Oprandi (Summer 2017, Physics and Astronomy Career Development Summer Scholar '17) • Doreen Xiong (Senior Honours 2017)

Teaching experience

2016 - 2018	• Second marker (= internal reviewer), Yr4 and MSc projects (3 in total)	Univ. Edinburgh
2016 - 2017	• Workshop leader, "Introductory Astrophysics" (Module 3, Yr1 course, ~ 150 students)	School of Physics
2014 - 2015	• Substitute lecturer (2 weeks; ~ 80 students) and Tutor (12 students) "Mathematics for Science and Engineering 1b" (= Real Analysis, Yr1 core course) • Tutor for "Mathsbase" (= drop-in center for all Yr1 Maths/Eng core courses)	Univ. Edinburgh School of Maths
2014	• Invited lecturer (2 lectures) & Supervisor, Advanced Int'l Research School (15 students) <i>Sole person responsible for the final phase, with daily individual sessions and closing workshop</i>	Kavli Summer Program (KSPA)
2013 - 2015	• Observer (= external reviewer), Yr4/Yr5 projects (7 in total) • Co-supervisor & Second marker, Yr4/Yr5 projects (3 in total, primary: M. Ruffert)	Univ. Edinburgh School of Maths
2012 - 2013	• Guest lecturer (2 lectures), Graduate course A780 (~ 10 students) "Advanced lecture series on globular clusters"	Indiana University Dept. Astronomy

Professional activities and organizational experience

PhD external examiner; Institutions: Sterrewacht Leiden, NL (T. Boekholt, 2015); Univ. Bologna, IT (E. Alessandrini, 2016)

Reviewer, Funding bodies: European Commission (H2020 MSCA, 2016+), National Commission for Scientific and Technological Research in Chile - CONICYT (ALMA Fund, 2017); 222nd AAS Chambliss Student Awards (2013)

Referee, Journals: MNRAS (including Letters; 2012+); ApJ (including Letters; 2013+); A&A (2013+); PASA (2017+)

2018	SOC Member	MPIA: "Survival of dense star clusters in the Milky Way system"	Heidelberg, DE
2017	Session Chair	MODEST-17: "MODEST under Prague's starry skies"	Prague, CZ
	Session Chair	AAS Division of Dynamical Astronomy Meeting #48	London, UK
	SOC Member	Italian National Prize of the University Press (declined)	Rome, IT
2016+	Organizer	ROE "Coffee Talks" (2016-2018); "UKATC@Coffee" mini-series	Edinburgh, UK
	Organizer	"Gaia Challenge - Collisional systems" Team Meeting	Edinburgh, UK
2015	Session Chair	MODEST-15S: "Celebrating Steve McMillan 60th birthday"	Kobe, JP
	SOC Chair	UoE Researchers meeting with Italian Consul General for Scotland	Edinburgh, UK
2012	LOC Chair	"Recent advances in galactic dynamics"	Como, IT

Conference presentations

Since 2009: 37 presentations, 13 of which upon accepted invitation

2018	Solicited Talk	MPIA: "Survival of star clusters in the MW" (remote)	Heidelberg, DE
	Invited Talk	CfA: "Multiple populations in stellar clusters" (declined)	Sexten, IT
	Invited Keynote	STScI Conference: "Science with Precision Astrometry"	video Baltimore, USA
	Talk	ISSI: "Globular clusters in the Gaia era - 1st meeting"	Bern, CH
	Invited Talk	"Chemical and dynamical evolution of galaxies" (declined)	Sexten, IT
2017	Talk	IAS workshop: "Stellar Dynamics in Galactic Nuclei"	video Princeton, USA
	Invited Review	Astro-GR: Capture of compact objects by SMBHs	Barcelona, SP
	Talk	MODEST-17: "Under Prague's starry skies"	slides Prague, CZ
	Invited Talk	"The amazing life of stars"	slides Cefalù, IT
	Talk	AAS DDA Meeting 2017	video London, UK
	Invited Talk	Ringberg meeting: "The exciting lives of galactic nuclei"	slides Ringberg, DE
2016	Talk	631 Heraeus Seminar: "Stellar aggregates"	Bad Honnef, DE
	Talk	Gaia Challenge 4 @ NORDITA	slides Stockholm, SE
	Invited Review	MODEST-16: "Star clusters as cosmic laboratories"	slides Bologna, IT
2015	Invited Talk	MODEST-15S: "Celebrating Steve McMillan 60th birthday"	Kobe, JP
	Invited Talk	MODEST-15: "Modelling stellar systems in Chile"	Concepcion, CL
2014	Invited Talk	Center for Astrophysics (CfA): "Stellar N-body Dynamics"	Sexten, IT
	Poster	SUPA Cormack Meeting 2014	Edinburgh, UK
	Invited Talk	KSPA 2014: "Gravitational dynamics" @ CITA	slides Toronto, CA
	Invited Talk	Lorentz Center: "Nuclear Star Clusters"	slides Leiden, NL
	Two posters	MODEST-14: "The dance of stars"	Bad Honnef, DE
2013	Invited Talk	3rd Aarseth "Gluehwein" Meeting	Bonn, DE
	Talk	SUPA Cormack Meeting 2013	Edinburgh, UK
	Invited Review	Gaia Challenge 1 @ Surrey	Guildford, UK
	Talk, two posters	222nd AAS Meeting	Indianapolis, USA
	Dissertation talk	221st AAS Meeting	Long Beach, USA
2012	Talk	3rd Indiana Astrophysics Meeting	Terre Haute, USA
	Talk, two posters	28th IAU GA: "Origin of Massive Star Clusters"	Beijing, CN
	Talk	Volta: "Recent advances in stellar and galactic dynamics"	Como, IT
2011	Talk	"Dark matter from star clusters to clusters of galaxies"	Univ. Bologna, IT
	Poster	218th AAS Meeting	Boston, MA, USA
	Talk	ESO: "Dynamics of Low-Mass Stellar Systems"	slides Santiago, CL
	Poster	217th AAS Meeting	Seattle, USA
2010	Invited Talk	Centro Studi Americani, Fulbright Meeting	Roma, IT
2009	Talk	Volta: "Plasmas in the Laboratory and in the Universe"	Como, IT
	Talk	Workshop of the Doctoral School in Physics	Milano, IT
	Talk	"Dark matter haloes from smallest to largest scale"	Bologna, IT
	Poster	Lincei: "Galaxy properties across cosmic ages"	Roma, IT
	Talk, two posters	KITP: "Formation and Evolution of Globular Clusters"	video Santa Barbara, USA

Seminars and colloquia

Since 2008: 32 seminars, 24 of which upon accepted invitation

2018	Invited Colloquium	Univ. Tokyo, Dept. Astronomy	Tokyo, JP
	Invited Seminar	Univ. Milano, Dept. Physics (Astrophysics series)	Milano, IT
	Invited Seminar	Institute d'Astrophysique de Paris (Galaxies Club)	Paris, FR
	Seminar	Univ. Tokyo, Dept. Astronomy (MakinoLab series)	Tokyo, JP
	Invited Colloquium	Keele Univ., Dept. Physics (Astrophysics series)	Staffordshire, UK
	Invited Seminar	Johns Hopkins Univ., Dept. Physics & Astronomy	Baltimore, USA
	Invited Seminar	Max Planck Institute for Astrophysics	Garching, DE

2017	Invited Seminar	Institute for Advanced Studies (Astrophysics series)	Princeton, USA
	Invited Colloquium	Queen Mary Univ. of London (Astronomy Unit)	London, UK
	Invited Seminar	Univ. Cambridge, DAMTP (Astrophysics series)	Cambridge, UK
	Invited Colloquium	Univ. Durham, Centre of Extragalactic Astronomy	Durham, UK
	Short seminar	Univ. Edinburgh, IfA (Stobie)	Edinburgh, UK
	Invited Colloquium	Arcetri Astrophysical Observatory, INAF	Firenze, IT
	Invited Seminar	Univ. Glasgow, Dept. Physics (A&A Astrochat)	Glasgow, UK
2016	Seminar	Mullard Space Science Laboratory (Astrophysics series)	Dorking, UK
	Short seminar	Univ. Edinburgh, IfA (Stobie)	Edinburgh, UK
2015	Invited Colloquium	UC Santa Cruz, Dept. Astronomy & Astrophysics	Santa Cruz, USA
	Invited Colloquium	MPIA & Landessternwarte, Konigstuhl Colloquium	Heidelberg, DE
	Invited Seminar	MPIA, Galaxy Structure Group Meeting	Heidelberg, DE
	Seminar	Univ. Edinburgh, School of Maths (Waves & Flows)	Edinburgh, UK
	Invited Colloquium	Univ. Central Lancashire, J. Horrocks Institute	Preston, UK
2014	Invited Seminar	CITA (Astro Fluid Discussion)	Toronto, CA
	Two chalk talks	Univ. Edinburgh, School of Maths (Waves & Flows)	Edinburgh, UK
	Invited Seminar	Univ. Surrey, Dept. Physics	Guildford, UK
2013	Short seminar	Univ. Edinburgh, School of Maths (ACM seminar)	Edinburgh, UK
	Invited Colloquium	Ball State Univ., Dept. Physics	Muncie, USA
2012	Invited Colloquium	Indiana Univ., Dept. Astronomy	Bloomington, USA
	Invited Seminar	Univ. Cambridge, IoA (Wednesday seminar)	Cambridge, UK
	Invited Seminar	ESA-ESTEC, Prospective ESA fellows Jamboree	Noordwijk, NL
2011	Invited Seminar	Northwestern Univ., CIERA (Theory seminar)	Evanston, USA
2010	Invited Seminar	Drexel Univ., Dept. Physics	Philadelphia, USA
2008	Seminar series	Univ. Milano, Dept. Physics (three lectures)	Milano, IT

Selected outreach, diversity, and mentoring activities

2018	Panelist	<u>“Research fellowships: a biased how-to”</u> , IfA development event	Edinburgh, UK
	Invited article	Magazine “Astronomy”, Column <u>“Ask Astro”</u>	
2017	Invited case study	UoE Research Staff Resilience Guide, Sect. <u>“Working relationships”</u>	
2016+	Various activities	ROE Open Days (Public lecture and Astro Arts & Crafts; annually, ×3)	Edinburgh, UK
2016	Public lecture	<u>“New science from old stellar systems”</u> , ROE Winter Talks	Edinburgh, UK
	Selected participant	IAD Course: <u>“Research Leader Programme”</u>	Edinburgh, UK
2015	Invited lecture	<u>“At the crossroads of Maths, Astro, and Physics”</u> , GAMES Talks	Edinburgh, UK
	Invited talk	<u>“How to get a Fellowship”</u> , School of Maths development event	Edinburgh, UK
2014+	Panelist	<u>“Women in Maths: Is there a PhD in your future?”</u> (annually, ×3)	Edinburgh, UK
	Speaker	Informal 1851 Royal Commn presentation for HRH Princess Anne	London, UK
2013	Invited talk	<u>“Stellar dynamics simulations”</u> , Big Red II Cray Dedication	Bloomington, USA
	Public lecture	<u>“Women in Astronomy”</u> , NASA Astro4girls High School program	Carmel, USA
	Featured researcher	Indiana Univ. Astronomy & WIYN Observatory Outreach Movie	Bloomington, USA
2011	Public talk	<u>“A journey in the Universe”</u> , Drexel Physics Open House	Philadelphia, USA

Press highlights

2018	<u>“Updating the dynamical paradigm for Galactic globular clusters”</u>	EU CORDIS
2016	<u>“Towards a new paradigm for globular star clusters”</u>	1851 Royal Commn
2015	<u>Marie Skłodowska-Curie Award, Leverhulme Grant Award, Personal feature article</u> <u>“Ski or jump? How neutron star kicks can break up clusters”</u> (Contenta, Varri, Heggie 2015) <i>Also highlighted in several international media outlets, from the “Portal to the Universe” to Reddit</i>	UoE Maths RAS/INAF
2013	Personal feature article, as part of 2013 Women’s History Month Celebration <u>“Early Evolution of a Star Cluster in the Galactic Tidal Field”</u> (Vesperini, Varri et al. 2014)	The Indianapolis Star SC13 Science Exhibit
2012	<u>Gruber Fellowship Award, Ceremony, Personal feature article</u> at 28th IAU GA, Beijing, CN	IAU/Gruber/UniMi