

Rainer Schödel

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Email: rainer@iaa.es

Phone: (+34) 622749287

Instituto de Astrofísica de Andalucía (IAA-CSIC)

Glorieta de la Astronomía, s/n, 18008 Granada, Spain

Research interests Galactic centre, Sagittarius A*, massive black holes, star formation, infrared astronomy, high angular resolution imaging, infrared interferometry

Education **Ludwig-Maximilians-Universität/MPE** München, Germany
PhD in Natural Sciences 2004
Advisor: Reinhard Genzel

Ludwig-Maximilians-Universität München, Germany
Diploma in Geophysics 2000

Professional experience **Staff Researcher – Investigador Científico** Feb 2021
Instituto de Astrofísica de Andalucía (CSIC), Granada, Spain
Staff Researcher – Científico Titular Mar 2017
Instituto de Astrofísica de Andalucía (CSIC), Granada, Spain
Research Fellow 2014-2017
Instituto de Astrofísica de Andalucía (CSIC), Granada, Spain
Ramón y Cajal Fellow 2008 - 2014
Instituto de Astrofísica de Andalucía (CSIC), Granada, Spain
Postdoctoral Researcher 2004 - 2007
Universität zu Köln, Köln, Germany
Predoctoral Researcher 2000 - 2003
Max-Planck-Institut für extraterrestrische Physik, Garching bei München, Germany

Honors and merits ERC Consolidator Grant 2013
PI of ESO Large Programme 195.B-0283 2015-2017
Lauren B. Leichtman & Arthur E. Levine Visiting Scholar at UCLA 2012
with Prof. A. Ghez, Department of Physics and Astronomy, UCLA, USA.
Otto-Hahn Medal (Max-Planck-Society) 2005

Publications [Refereed publications on NASA/ADS](#)
[Non-refereed publications on NASA/ADS](#)

Publication statistics Number of papers 130 Citations 7961 Normalised citations 989
(refereed papers) h-index 44 i10-index 114 i100-index 18
source: NASA/ADS

Invited talks

- The Galactic Centre in the Thermal Infrared** 16 Oct 2020
[Ground-based thermal infrared astronomy - past, present and future](#)
ESO, Online.
- The nuclear stellar disc and cluster of the Milky Way** 24 Oct 2019
[Galactic Center Workshop 2019](#), Keio University, Yokohama, Japan.
- The stellar cusp at the Galactic Center and the missing giants problem** 27 Feb 2017
[The Exciting Lives of Galactic Nuclei](#), Ringberg Castle, Tegernsee, Germany.
- The stellar cusp around the Milky Way's central black hole** 7 Sep 2016
[11th International LISA Symposium](#), University of Zurich, Zurich Switzerland.
- Stellar Structure and Dynamics at the Galactic Center** 8 Feb 2016
[Dynamics and accretion at the Galactic Center](#), Aspen Center for Physics, Aspen (CO), USA.
- The Milky Way's nuclear star cluster and massive black hole** Aug 2014
IAU Symposium 312, Star clusters and black holes in galaxies across cosmic time, Beijing, China.
- A specimen seen close up: the Milky Way's nuclear star cluster** 6 Jun 2014
The Unquiet Universe, Cefalù, Sicily, Italy.
- The Nuclear Star Cluster of the Milky Way** 23 Aug 2012
Origin and Complexity of Massive Star Clusters, IAU XXVIII General Assembly, Special Session 1, Beijing, China.
- The Galactic Center in Context: from Sub- parsec to Kiloparsec Scales** 14 May 2012
[Crafoord Prize Symposium in Astronomy](#), Lund, Sweden.
- The mean infrared emission from Sagittarius A*** 30 Aug 2011
Astronomy at High Angular Resolution 2011, Bad Honnef, Germany.
- An Observer's View of the Central Parsecs of the Milky Way** Apr 2011
Assembling the Puzzle of the Milky Way, Le Grand-Bornand, France.
- The Massive Black Hole at the Galactic Center** 21 Sep 2010
Evolution of galaxies, their central black holes and their large-scale environment, Potsdam, Germany.

- The Center of the Milky Way** 17 Sep 2010
IX Reunión Científica de la Sociedad Española de Astronomía, Madrid, Spain.
- The center of the Milky Way** Sep 2010
IX Reunión Científica de la Sociedad Española de Astronomía, Madrid, Spain.
- The stellar cluster at the center of the Milky Way** 22 Jun 2010
[Central Massive Objects: The Stellar Nuclei - Black Hole Connection](#), ESO Headquarters, Garching bei München, Germany.
- A Stellar Cusp around Sagittarius A*?** 10 May 2010
[The Sixth Harvard-Smithsonian Conference on Theoretical Astrophysics](#), Cambridge (MA), USA.
- Summary: the Massive Black Hole at the Center of the Milky Way** Feb 2010
Probing Strong Gravity near Black Holes, Prague, Czech Republic.
- Observations of the Galactic Center with VLT/NACO** 22 Sep 2009
Jornada ESO 2009, Madrid, Germany.
- Stars, stellar and intermediate mass black holes near Sagittarius A*** 8 Sep 2009
LISA Astro-GR@BCN* Merger of compact objects by supermassive black holes, Barcelona, Spain.
- Black Holes in Galactic Nuclei - A (Very) Short Introduction** May 2009
2nd Sino-German Frontiers of Science Symposium 2009, Potsdam, Germany.
- The structure of the nuclear stellar cluster of the Milky Way** Aug 2006
IAU Symposium 238, Prague, Czech Republic, 21-25 August 2006.
- The Centre of the Milky Way** 1 Oct 2004
[Multiband Approach to AGN](#), Bonn, Germany.
- The Galactic Center: Breakthroughs with VLT/NACO** Sept 2003
The Dense Interstellar Medium in Galaxies, Zermatt, Switzerland.
- The Galactic Centre and its Black Hole** Jun 2003
<https://ui.adsabs.harvard.edu/abs/2004ASSL..315.....A/abstract>, Granada, Spain.
- The Galactic Center stellar cluster: the central arcsecond** Nov 2002
Galactic Center Workshop 2002, Kona, Hawaii, USA.

Books and edited
conference proceed-
ings

Highlights of Spanish Astrophysics X

[Proceedings of the XIII Scientific Meeting of the Spanish Astronomical Society](#), held on July 16-20, 2018, in Salamanca, Spain. B. Montesinos, A. Asensio Ramos, F. Buitrago, R. Schödel, E. Villaver, S. Pérez-Hoyos, I. Ordóñez-Etxeberria (eds.) (2019).

The Universe under the Microscope - Astrophysics at High Angular Resolution

Editors: Rainer Schödel, Andreas Eckart, Susanne Pfalzner, and Eduardo Ros, [Journal of Physics: Conference Series, Volume 131](#), (2008).

Galactic Center Workshop 2006 - From the Center of the Milky Way to Nearby Low-Luminosity Galactic Nuclei

Editors: R. Schödel, G. C. Bower, M. P. Muno, S. Nayakshin, and T. Ott, [Journal of Physics: Conference Series, Volume 54](#), (2006).

The Black Hole at the Center of the Milky Way

Eckart, Andreas; Schödel, Rainer; Straubmeier, Christian; London:Imperial College Press; Hackensack, NJ : Distributed by World Scientific Pub. Co., c2005 (2005).

Colloquium talks

Sagittarius A* - the massive black hole at the centre of the Milky Way 15 Dec 2020

Observatoire de la Côte d'Azur, Nice, France (Online).

The Black Hole at the Centre of the Milky Way 5 Nov 2020

IFIC-CSIC, Valencia, Spain (Online).

The Black Hole at the Centre of the Milky Way 21 Oct 2020

UNAM, México, México (Online).

Near-infrared observations of the centre of the Milky Way 28 Oct 2019

Tohoku University, Sendai, Japan.

The Nuclear Star Cluster at the Galactic Centre 29 Mar 2019

Max-Planck-Institute for Radio Astronomy, Bonn, Germany.

The Hidden Stellar Cusp around the Milky Way's MBH 31 Jul 2018

Lunch Talk, ESO Headquarters, Garching bei München, Germany.

The stellar cusp around the Milky Way's central black hole 4 Dec 2017

Space Telescope Science Institute, Baltimore, USA.

Near-infrared studies of the nearest galactic nucleus	22 Aug 2017
ESO Headquarters, Garching bei München, Germany.	
Near-infrared studies of the nearest galactic nucleus	15 Jun 2017
School of Astronomy and Space Science, Nanjing University, Nanjing, China.	
Black hole-star interactions at the centre of the Milky Way	20 Feb 2017
Institute of Astrophysics and Space Sciences (IA) Astronomical Observatory of Lisbon, Lisbon, Portugal.	
Stellar Structure and Dynamics at the Galactic Center	29 Jun 2016
ESO Vitacura Office, Santiago de Chile, Chile.	
The nuclear cluster of the Milky Way	8 Oct 2014
Royal Astronomical Observatory, Edinburgh, UK.	
Short-Period Stars Near Our Galaxy's Supermassive Black Hole	13 May 2013
Institut für Astronomie, UNiversity of Vienna, Vienna, Austria.	
Holographic Imaging: Sharp Images for Everybody	15 Nov 2012
CAB-CSIC/ESAC, Villafranca(Madrid), Spain.	
An Observer's View of the Central Parsecs of the Milky Way	18 Apr 2012
Pontificia Universidad Católica, Santiago de Chile, Chile.	
Holographic Imaging of Dense Fields:the Amazing Poor Man's MCAO	10 Apr 2012
ESO Vitacura Office, Santiago de Chile, Chile.	
Speckle Holography: Simple, Economical, and Powerful	6 Jul 2011
MPIA, Heidelberg, Germany.	
Continually Evolving: Our Understanding of the Galactic center	6 Jul 2010
Joint Heidelberg Astronomy Colloquium, Heidelberg, Germany.	
Speckle Imaging Reloaded - Perspectives for the GTC and WHT	15 Jun 2010
IAC, Tenerife, Spain.	
Structure and kinematics of the Milky Way's nucleus	18 May 2010
Carnegie Observatory, Pasadena (CA), USA.	

The Beauty and The Beast: The Stellar Cluster and the Black Hole at the Galactic Center	22 Mar 2010
MPI for Gravitational Physics, Golm (Potsdam), Germany.	
At the Bottom of the Potential Well: the center of the Milky Way	3 Dec 2009
IRAM, Granada, Spain.	
At the Bottom of the Potential Well: the center of the Milky Way	26 Nov 2009
Universitat de València, Valencia, Spain.	
The star cluster at the center of the Milky Way	15 Jul 2009
Universidad de Valparaíso, Valparaíso, Chile.	
The star cluster at the center of the Milky Way	8 Jul 2009
Universidad de Chile, Santiago de Chile, Chile.	
The nuclear star cluster of the Milky Way	13 May 2009
MPI for Gravitational Physics, Golm (Potsdam), Germany.	
The nuclear star cluster of the Milky Way	4 Feb 2009
Division of Astronomy and Astrophysics, UCLA, Los Angeles (CA), USA.	
The nuclear star cluster of the Milky Way	28 Jan 2009
IPAC/Caltech, Pasadena (CA), USA.	
Multi-wavelength observations of the LLAGN M81* and Sgr A*	19 Nov 2008
IRAM, Grenoble, France.	
The structure of the nuclear stellar cluster of the Milky Way	29 Aug 2007
Czech Academy of Sciences, Prague, Czech Republic.	
The center of the Milky Way: the nuclear star cluster and the central black hole	21 Sep 2007
IAA-CSIC, Granada, Spain.	
The structure of the nuclear stellar cluster of the Milky Way	11 May 2007
Universidad de Valparaíso, Valparaíso, Chile.	

High resolution near-infrared imaging of the young stellar clusters Arches and G333.6-0.2 2 May 2007
SFB Colloquium, University of Cologne, Köln, Germany.

The structure of the nuclear stellar cluster of the Milky Way 5 Feb 2007
DAMIR-CSIC, Madrid, Spain.

Infrared observations of Sagittarius A* Jan 2007
University of Amsterdam, Amsterdam, The Netherlands.

Infrared Observations of the Center of the Milky Way Apr 2005
NASA Ames Research Center, Moffett Field (CA), USA.

Multi-Wavelength Observations of Sgr A*/M81* Apr 2005
IRAM, Grenoble, France.

Contributed talks

The Milky Way's nuclear star cluster: Old, metal-rich, and cuspy 21 Sept 2020
[Exploring the Universe](#), Cologne/Prague Based Online Conference.

The Star Formation History of the Galactic Centre 6 Sep 2019
[Morrisfest 2019](#), UCLA, Los Angeles, USA.

The "Our Galaxy" Working Group 10 Jun 2019
[¡España en SKA!](#), IAA-CSIC, Granada, Spain.

The Milky Way's nuclear star cluster: Old, metal-rich, cuspy 29 Apr 2019
[Tal Alexander Workshop](#), Tel Aviv University, Tel Aviv, Israel.

The Stellar Cusp around the Milky Way's MBH 29 Jun 2018
[MODEST-18](#), Firá, Santorini, Greece.

The stellar cusp around the Milky Way's central black hole 29 Jun 2018
[Stellar Dynamics in Galactic Nuclei](#), Institute for Advanced Study, Princeton (NJ), USA.

The size, shape, and mass of the Milky Way's nuclear star cluster Jul 2014
Nuclear Clusters in Galaxies and the Role of the Environment, Lorentz Center, Leiden, The Netherlands.

Holographic Imaging: Sharp Images for Everyone 9 Jul 2012
Sociedad Española de Astronomía, X Reunión Científica, Valencia, Spain.

	Searching the Stellar Cusp around Sagittarius A*	21 Oct 2009
	Galactic Center Workshop 2009, Shanghai, China.	
	The structure of the nuclear star cluster of the Milky Way	30 Jul 2008
	Lorentz Center, Leiden, The Netherlands.	
	The hub of the wheel: The nuclear star cluster of the Milky Way	Apr 2008
	Astronomy at High Angular Resolution 2008, Bad Honnef, Germany.	
	The structure of the nuclear stellar cluster of the Milky Way	18 Jul 2007
	IAU Symposium 245, Oxford, UK.	
	The structure of the central stellar cluster of the Milky Way	12 Jun 2007
	DFG-NSF Astrophysics Research Conference, Washington D.C., USA.	
	Multi-Wavelength Studies of Sgr A*	Jun 2005
	APC Workshop, Paris, France.	
	NIR Emission and flares from Sgr A*	25 Mar 2004
	Sgr A* at 30 Workshop, Green Bank , WV, USA.	
Outreach talks	The Black Hole at the Centre of the Milky Way	17 Dec 2020
	Societat Catalana de Física, Barcelona, Spain (Online).	
	Premio Nobel en Física 2020 - El Agujero Negro de la Vía Láctea	29 Oct 2020
	Ciclo Lucas Lara, IAA-CSIC, Granada, Spain. Video	
	Das Zentrum der Milchstraße und sein Schwarzes Loch	14 Oct 2020
	Online talk, Haus der Astronomie, Heidelberg, Germany. Video	
	El cambio climático - ¿ Qué es, por qué es antropogénico, y por qué es un problema urgente?	19 Feb 2020
	I.E.S. Miguel de Cervantes, Granada, Spain	
	El cambio climático - ¿ Qué es, por qué es antropogénico, y por qué es un problema urgente?	30 Jan 2020
	Ciclo Lucas Lara, IAA-CSIC, Granada, Spain Video	

The Black Hole at the Centre of the Milky Way Colegio Internacional San Francisco de Paula, Sevilla, Spain.	15 Nov 2019
El Sistema Solar Colegio Internacional San Francisco de Paula, Sevilla, Spain.	15 Nov 2019
Measuring the Composition of Astrophysical Bodies Colegio Internacional San Francisco de Paula, Sevilla, Spain.	22 Mar 2019
El Sistema Solar... y más allá Colegio Internacional San Francisco de Paula, Sevilla, Spain.	16 Nov 2018
Diez millones de estrellas y un agujero negro: El centro de la Vía Láctea Caixa Forum, Sevilla, Spain.	14 Jun 2018
El centro de la Vía Láctea I.E.S. Nuestra Señora de la Consolación, Granada, Spain.	5 Nov 2014
El centro de la Vía Láctea Alájar (Huelva), Spain.	27 Sep 2014
El agujero negro en el centro de la Vía Láctea XXI Congreso Estatal de Astronomía, Granada, Spain.	1 May 2014
El centro de la Vía Láctea Agrupación Astronómica de Madrid , Madrid, Spain.	15 Oct 2013
El centro de la Vía Láctea I.E.S. Ciudad de los Poetas, Madrid, Spain.	14 Oct 2013
La Vía Láctea y su corazón oscuro Alájar (Huelva), Spain.	Sep 2013
La Vía Láctea y su corazón oscuro Colegio Europa, Sevilla, Spain.	18 Mar 2011
La estructura de la Vía Láctea, su núcleo y su corazón oscuro Tiempo para la Astronom Escuela Universitaria "Fco Maldonado" de Osuna, Osuna, Spain.	3 Sep 2009
La estructura de la Vía Láctea, su núcleo y su corazón oscuro	30 Apr 2009

Ciclo Lucas Lara, IAA-CSIC, Granada, Spain.

Outreach articles

25 Millionen Sterne und ein Schwarzes Loch

Physik in unserer Zeit, DOI: 10.1002/piuz.201801517, May 2018.

El Moby Dick de ... Rainer Schödel (IAA)

Información y Actualidad Astronómica, number 55, Jul 2018.

Un sondeo infrarrojo sin precedentes del centro de la Vía Láctea

Información y Actualidad Astronómica, number 51, Feb 2017.

Chorros galácticos en rayos gamma apuntan a un pasado violento de Sagitario A*

Información y Actualidad Astronómica, number 38, Oct 2012.

El corazón de la Vía Láctea

Información y Actualidad Astronómica, number 27, Feb 2009.

Das dunkle Herz unserer Milchstraße

R. Schödel, R. Genzel & T. Ott, Sterne und Weltraum (ISSN 0039-1263), Jahrgang 42, Nr. 8, p. 36 - 42 (2003).

SOC member of conferences and schools

MW-Gaia Workshop 2021

Online Workshop on the Galactic Centre and Inner Galaxy, Heidelberg, 10-12 Feb 2021.

SOMACHINE Machine Learning, Big Data, and Deep Learning in Astronomy

IAA-CSIC, Granada, Spain, 23-27 Nov 2020 (Online).

Scientific writing and presentation in Astronomy

IAA-CSIC, Granada, Spain, 16-17 Sep 2020 (Online).

1st IAA-CSIC Severo Ochoa School on Statistics, Data Mining and Machine Learning

IAA-CSIC, Granada, Spain, 4-8 Nov 2019.

XIII Reunión Científica of the Sociedad Española de Astronomía

Salamanca, Spain, 16-20 Jul 2018.

XII Reunión Científica of the Sociedad Española de Astronomía

Bilbao, Spain, 18-22 Jul 2018.

The Alájar Meeting 2015 - Galactic nuclei at high resolution in many dimensions

Alájar (Huelva), Spain, 3-11 Oct 2015.

8th VLTI Summer School - High angular resolution in astrophysics: optical interferometry from theory to observations

Cologne, Germany, 6-13 Sep 2015.

The Alájar Meeting 2014 - Growth and evolution of the Milky Way's nuclear star cluster and its central black hole

Alájar (Huelva), Spain, 3-11 Oct 2015.

The Galactic Center Black Hole Laboratory

Granada, Spain, 19-22 Nov 2013.

The Alájar Meeting 2013 - Stellar dynamics and growth of massive black holes

Alájar (Huelva), Spain, 16-27 Sep 2013.

A window to the formation of the Milky Way: Dynamics, observational and numerical astrophysics of dense stellar systems

Summer Workshop, Aspen Center for Physics, Aspen (CO), USA, 20 May - 9 June 2012.

The Central Kiloparsec in Galactic Nuclei - Astronomy at High Angular Resolution 2011

Bad Honnef, Germany, 29 Aug - 2 Sep 2011.

Utilización del Interferómetro VLT en el presente y en el futuro inmediato

IAA (CSIC), Granada, 5-7 Nov 2008.

The Universe under the Microscope - Astrophysics at High Angular Resolution

Bad Honnef, Germany, 21-25 Apr 2008.

Galactic Center Workshop 2006 - From the Center of the Milky Way to Nearby Low-Luminosity Galactic Nuclei

Bad Honnef, Germany, 18-22 Apr 2006.

Teaching

Lecture and exercise: A Guide to Scientific Presentations

Scientific writing and presentation in Astronomy, Granada, Spain, 16-17 Sep 2020 (Online).

	Lecture: The Galactic Center and Gravitational Waves	7 July 2018
	2nd Institute of Space Sciences Summer School, IEEC, Barcelona, Spain.	
	5 Lectures on the Galactic Center	25-29 May 2015
	School of Astrophysics "Francesco Lucchin", Populonia, Italy.	
	Tutor for Physics Lab	2004-2006
	I. Physics Institute, University of Cologne, Köln, Germany.	
PhD students	Álvaro Martínez Arranz	2020-present
	A high angular resolution study of stellar populations at the Galactic Centre. IAA-CSIC/University of Granada, Granada, Spain.	
	Aurelia Teresa Gallego-Calvente	2014-present
	New windows onto the stellar population at the Galactic Center: multi-wavelength and time-domain studies. IAA-CSIC/University of Granada, Granada, Spain.	
	Francisco Nogueras Lara	2014-2018
	A high angular resolution imaging study of the nuclear bulge of the Milky Way. IAA-CSIC/University of Granada, Granada, Spain.	
	Eulalia Gallego Cano	2014-2018
	Study of the dynamical and morphological properties of massive stars with high angular resolution techniques. IAA-CSIC/University of Granada, Granada, Spain.	
	Joel Sánchez-Bermudez	2010-2015
	The structure, stellar population, and recent star formation history of the Milky Way's nuclear star cluster. IAA-CSIC/University of Granada, Granada, Spain.	
	Co-adviser, together with Prof. A. Eckart of R. Buchholz (PhD 2012), L. Meyer (PhD 2008), and K. Muzic (PhD 2008)	
	University of Cologne, Köln, Germany.	
Service	Coordinator of Pillar 2 of Severo Ochoa Excellence Program, Member of Scientific Committee	Feb 2021 - present
	IAA-CSIC, Granada, Spain.	
	Training Coordinator of Severo Ochoa Excellence Program, Member of Steering Committee	Jan 2019 - present
	IAA-CSIC, Granada, Spain.	
	Member of Comisión Científica	Mar 2015 - Feb 2019
	Sociedad Española de Astronomía, Madrid, Spain.	
	Advisor for ERC Grant applicants	Oct 2014, Sept 2019
	Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain.	

Observing Programmes Committee (OPC), Nov 2012-May 2014
chair of Panel B1

European Southern Observatory (ESO) Garching bei München, Germany.

**Member of Project Science Team of the Enhanced Resolution Imager
and Spectrograph (ERIS) for the VLT**

European Southern Observatory (ESO) Garching bei München, Germany.

Time Allocation Committee, chair of panel GAES – Nov 2010-Nov 2011
Galaxies and Stars

Instituto de Astrofísica de Canarias, Tenerife, Canarias.

Organizer of weekly scientific seminar 2009-2012

Instituto de Astrofísica de Andalucía (CSIC), Granada, Spain.

Co-editor of GCNews, the Galactic Center Newsletter 2004-2011

Referee for A&A, MNRAS, ApJ, RMxAA, PASP, Opticon. 2003 - present

Memberships

SKA Our Galaxy Science Working Group

Sociedad Española de Astronomía (SEA)

European Astronomical Society (EAS)

International Astronomical Union (IAU)