

MONTHLY NEWSLETTER



INAF Osservatorio Astrofisico di Arcetri

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HIGHLIGHT

BEYOND-2p: PRIN MUR 2020

Keywords: Physical chemistry – Formation of stars and planets – Chemical reactions: dynamics, and kinetics. Started on **24 March 2022**.

INAF-OAA is one of the four Italian Teams of the ITN Astrochemical Origins ACO (University of Perugia, PI Nadia Balucani; University of Turin, PI Piero Ugliengo; University of Trento, PI Daniela Ascenzi; INAF - Osservatorio Astronomico di Arcetri, PI Claudio Codella) plus the unit of the University of Bologna (led by Sonia Melandri). This project is a spin-off of ACO and the aim is to extend the same combined interdisciplinary (astronomy + chemistry + spectroscopy) approach to the investigation of molecules in Sun-like star forming regions including elements beyond the Second Period of the Periodic Table of the Elements.

A combined theoretical/experimental approach will be used either to characterize the spectroscopy of the target molecules or to determine the kinetics parameters necessary for the astrochemical modeling. The proposed project is very timely, as observational capabilities have recently reached the sensitivity and resolution to achieve not only the mere detection but also the spatial distribution of less abundant molecules.

Team INAF-OAA: C. Codella (PI), L. Podio

Website (release on April 7th): <https://beyond2p.weebly.com/team5---arcetri.html>



REFEREED PUBLICATIONS

F. Salvestrini, C. Gruppioni, E. Hatziminaoglou, F. Pozzi, C. Vignali, V. Casasola, R. Paladino, S. Aalto, P. Andreani, S. Marchesi, T. Stanke

The molecular gas properties in local Seyfert 2 galaxies

<https://arxiv.org/abs/2203.15825>

Astronomy & Astrophysics, in press

P. Tozzi, L. Pentericci, R. Gilli, M. Pannella, F. Fiore, G. Miley, M. Nonino, H.J.A. Rottgering, V. Strazzullo, C. S. Anderson, S. Borgani, A. Calabrò, C. Carilli, H. Dannerbauer, L. Di Mascolo, C. Feruglio, R. Gobat, S. Jin, A. Liu, T. Mroczkowski, C. Norman, E. Rasia, P. Rosati, A. Saro

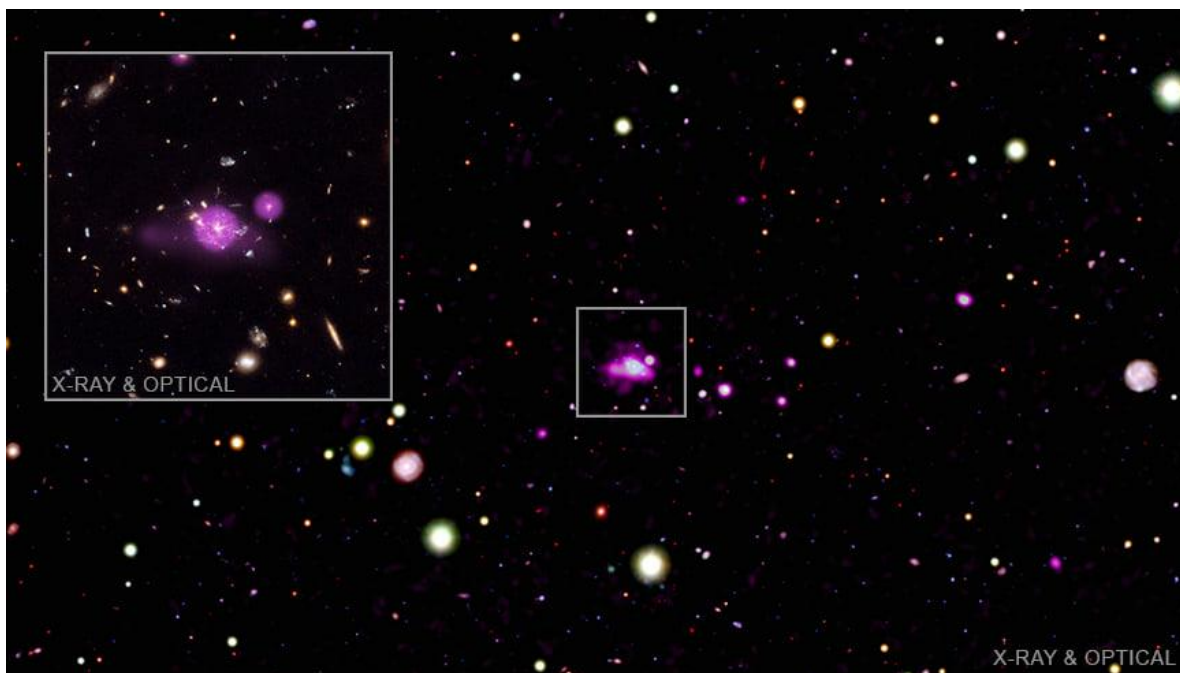
The 700 ks Chandra Spiderweb Field I: evidence for widespread nuclear activity in the Protocluster

<https://www.aanda.org/component/article?access=doi&doi=10.1051/0004-6361/202142333>

Astronomy & Astrophysics, in press

Media INAF: <https://www.media.inaf.it/2022/03/31/chandra-protoammasso-spiderweb/>

Press release NASA: <https://chandra.si.edu/photo/2022/spiderweb/>



Credits: X-ray: NASA/CXC/INAF/P.Tozzi et al; Optical (Subaru): NAOJ/NINS; Optical (HST): NASA/STScI)

K. Franceschetti, **L. Del Zanna**, **J. Soldateschi**, **N. Bucciantini**

Numerical equilibrium configurations and quadrupole moments of post-merger differentially rotating relativistic stars

<https://www.mdpi.com/2218-1997/8/3/172/htm>

Universe, in press

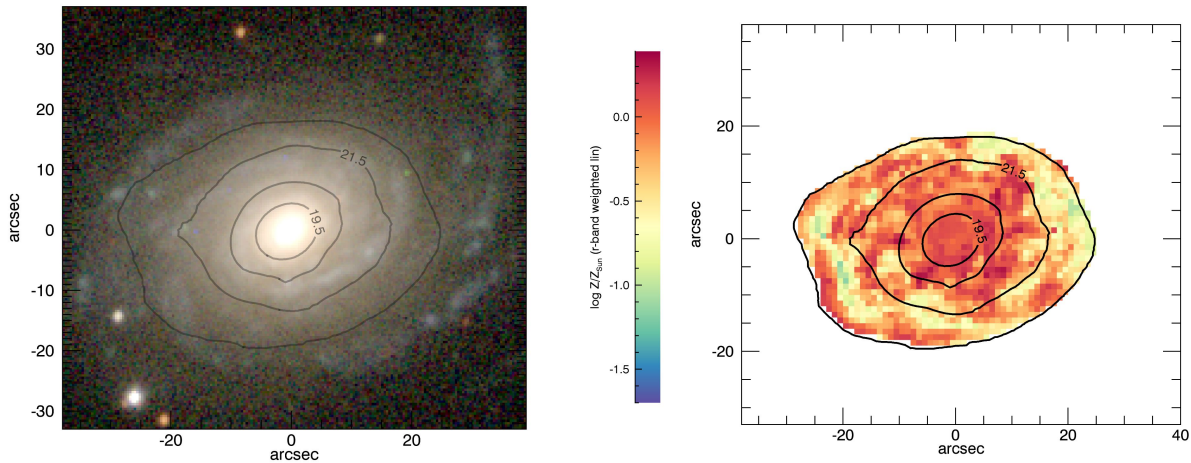
S. Zibetti, A. R. Gallazzi

Stellar mass as the 'glocal' driver of galaxies' stellar population properties

Monthly Notices of the Royal Astronomical Society (2022), 512, 1, 1415–1429

<https://academic.oup.com/mnras/article/512/1/1415/6530208>

Media INAF: <https://www.media.inaf.it/2022/04/07/galassie-societa-analogia/>



Credits: Zibetti et al., 2022/CALIFA collaboration

T.A. Davis, J. Gensior, M. Bureau, M. Cappellari, W. Choi, J. S. Elford, J. M. D. Kruijssen, **F. Lelli**, F.-H. Liang, L. Liu, I. Ruffa, T. Saito, M. Sarzi, A. Schrubba, T.G. Williams

WISDOM Project - X. The morphology of the molecular ISM in galaxy centres and its dependence on galaxy structure

<https://academic.oup.com/mnras/article/512/1/1522/6543718>

Monthly Notices of the Royal Astronomical Society (2022), 512, 1, 1522–1540

L. Spina, **L. Magrini**, **G. G. Sacco**, G. Casali, A. Vallenari, G. Tautvaisienė, F. Jiménez-Esteban, G. Gilmore, **S. Randich**, S. Feltzing, R. D. Jeffries, T. Bensby, A. Bragaglia, R. Smiljanic, G. Carraro, **L. Morbidelli**, S. Zaggia

The Gaia-ESO Survey: Chemical tagging in the thin disk. Open clusters blindly recovered in the elemental abundance space

<https://arxiv.org/abs/2203.14991>

Astronomy & Astrophysics, in press

G. Tautvaišienė, A. Drazdauskas, A. Bragaglia, S. L. Martell, **E. Pancino**, C. Lardo, Š. Mikolaitis, R. Minkevici, E. Stonkute, M. Ambrosch, V. Bagdonas, Y. Chorniy, **N. Sanna**, **E. Franciosini**, R. Smiljanic, **S. Randich**, G. Gilmore, T. Bensby, M. Bergemann, A. Gonneau, G. Guiglion, G. Carraro, U. Heiter, A. Korn, **L. Magrini**, **L. Morbidelli**, S. Zaggia

Gaia-ESO Survey: Detailed elemental abundances in red giants of the peculiar globular cluster NGC 1851

<https://www.aanda.org/articles/aa/pdf/2022/02/aa42234-21.pdf>

Astronomy & Astrophysics (2022), 658, A80

R. Carrera, L. Casamiquela, J. Carbajo-Hijarrubia, L. Balaguer-Núñez, C. Jordi, M. Romero-Gómez, S. Blanco-Cuaresma, T. Cantat-Gaudin, J. Lillo-Box, E. Masana, **E. Pancino**
OCCASO IV. Radial velocities and open cluster kinematics?
Astronomy & Astrophysics (2022), 658, A14
<https://www.aanda.org/articles/aa/pdf/2022/02/aa41832-21.pdf>

C. Aguilera-Gómez, L. Monaco, A. Mucciarelli, M. Salaris, S. Villanova, **E. Pancino**
Lithium on the lower red giant branch of five Galactic globular clusters
Astronomy & Astrophysics (2022), 657, A33
<https://www.aanda.org/articles/aa/pdf/2022/01/aa41750-21.pdf>

R. Blomme, S. Daflon, M. Gebran, A. Herrero, A. Lobel, L. Mahy, F. Martins, T. Morel, S. R. Berlanas, A. Blazère, Y. Frémat, E. Gosset, J. Maíz Apellániz, W. Santos, T. Semaan, S. Simón-Díaz, D. Volpi, G. Holgado, F. Jiménez-Esteban, M. F. Nieva, N. Przybilla, G. Gilmore, **S. Randich**, I. Negueruela, T. Prusti, A. Vallenari, E. J. Alfaro, T. Bensby, A. Bragaglia, E. Flaccomio, P. Francois, A. J. Korn, A. Lanzafame, **E. Pancino**, R. Smiljanic, M. Bergemann, G. Carraro, **E. Franciosini**, A. Gonneau, U. Heiter, A. Hourihane, P. Jofré, **L. Magrini**, **L. Morbidelli**, **G. G. Sacco**, C. C. Worley, S. Zaggia
The Gaia-ESO Survey: The analysis of the hot-star spectra
<https://arxiv.org/pdf/2202.08662.pdf>
Astronomy & Astrophysics, in press

OTHER PUBLICATIONS

F. Lelli

Nuove teorie gravitazionali: un'alternativa alla materia oscura
Giornale di Astronomia (2022), 48, 1
<http://www.libraweb.net/riviste.php?chiave=88>

R. Spiga

Il Telescopio Nazionale Galileo: 25 anni dopo. Gli strumenti di baseline.
Giornale di Astronomia (2022), 48, 1
<http://www.libraweb.net/riviste.php?chiave=88>

NEW ARRIVALS

POSTDOCTORAL FELLOW

Olga Bayandina



Hi all! As a postdoc fellow, I'll exploit the Sardinia Radio Telescope for Very Long Baseline Interferometry observations over an extended (~20-100 GHz) frequency range. I got my PhD in the Lebedev Physical Institute RAS working within the [RadioAstron project](#). RadioAstron was a unique international space-VLBI project that has enabled VLBI observations with baselines of more than an order of magnitude larger than the Earth, providing record high angular resolution. Before moving to Arcetri, I worked as a support scientist at the Joint Institute for VLBI ERIC ([JIVE](#)) the central organisation in the European VLBI Network ([EVN](#)). The main focus of my research is on the study of maser emission associated with star-forming regions. At the moment, my main collaboration is the [Maser Monitoring Organisation](#) - a global community for maser-driven astronomy.