Antonio Ragagnin

Date of birth: 05/11/1988 | **Nationality:** Italian | **Email address:** antonio.ragagnin@inaf.it |

Address: Via Piero Gobetti, 93/3, 40129, Bologna, Italy (Work)

ABOUT ME

Hydrodynamic cosmological numerical simulations. Galaxy clusters. Impact of baryon physics and cosmological parameters in weak and strong lensing. High Performance Computing (HPC).

H-index: 10

WORK EXPERIENCE

01/08/2023 – 11/08/2023
VISIT DR. KLAUS DOLAG AT THE OBSERVATORY OF MUNICH

01/04/2023 – CURRENT
POST-DOC AT INAF-ASTRONOMICAL OBSERVATORY OF BOLOGNA

working with Dr. Massimo Meneghetti and Dr. Carlo Giocoli on the Euclid Mission project on gravitational lensing from substructures in galaxy clusters

01/04/2021 – 31/03/2023
POST-DOC AT DIFA-UNIVERSITY OF BOLOGNA

Work with Prof. Lauro Moscardini, Dr. Massimo Meneghetti and Dr. Carlo Giocoli on the impact of baryon physics in galaxy-galaxy strong lensing signal in the core of galaxy clusters.

01/04/2022 – 31/05/2022
HPC-EUROPA3 FOUNDED VISIT OF DR. KLAUS DOLAG IN MUNICH

01/04/2019 – 31/03/2021
POST-DOC AT INAF-ASTRONOMICAL OBSERVATORY OF TRIESTE

Work with Dr. Giuliano Taffoni on improving scalability of high-resolution zoom-in hydrodynamic simulations of galaxy clusters.

2020
LAB ASSISTANT, FOUNDATION OF HPC AT UNIVERSITY OF TRIESTE

2020
LAB ASSISTANT, LABORATORIO DI PROGRAMMAZIONE AVANZATA PER LA FISICA, AT UNIVERSITY OF TRIESTE

2019
LAB ASSISTANT, LABORATORIO DI PROGRAMMAZIONE AVANZATA PER LA FISICA, AT UNIVERSITY OF TRIESTE

04/2017
VISIT DR CLAUDIO GHELLER AT CSCS (SWITZERLAND)

Support of university internship of Dr. Claudio Gheller student Conradin Roffler

12/2013 – 08/2014
WEB DEVELOPER AT ZCONSULTANCIES SRL

01/2008 – 07/2008
WEB DEVELOPER AT MANIFATTURA WEB SRL

08/2007 – 12/2007
SYS ADMIN JUNIOR AT CIMOLAI SPA

EDUCATION AND TRAINING

18/12/2018
PHD IN ASTRONOMY CUM LAUDE AT LUDWIG-MAXIMILIEN-UNIVERSITAET (MUNICH, GERMANY)

Thesis title "From the mass-concentration relation of haloes to GPUs and into the web: A guide on fully utilizing super computers for the largest, cosmological hydrodynamic simulations" under the supervision of Dr. Klaus Dolag, Prof. Michael Bader.

21/11/2013
LAUREA MAGISTRALE (MASTER DEGREE) CUM LAUDE IN THEORETICAL PHYSICS AT UNIVERSITY OF TRIESTE

Thesis title "Numerical simulations of galaxy fomation and evolution analysis in cosmological volumes" under the supervision of Dr. Giuseppe Murante, Dr. Pierluigi Monaco, and Prof. Stefano Borgani.

20/07/2011
LAUREA TRIENNALE IN PHYSICS WITH GRADE 110/110 AT UNIVERSITY OF TRIESTE

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1
GERMAN	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

C | C++ | Python | MPI | OpenMP | OpenACC | P-Gadget | SUBFIND | HTML, CSS, Javascript

ADDITIONAL INFORMATION

CONFERENCES AND SEMINARS

19/06/2023 – 30/06/2023
Self-interacting dark matter meeting (Pollica) talk Velocity dependent SIDM effects on galaxy cluster strong-lensing signals

02/2023
Euclid Galaxy Clusters SWG meeting in Bologna, talk on my Euclid paper

02/2023
INAF-OAS colloquium seminar title "Strong-lensed galaxies in simulated and observed galaxy clusters"

24/01/2023 – 26/01/2023
Zooming PRIN workshop “A golden era for strong gravitational lensing: new data, modelling and applications”, Milano

09/2023
CLUSTER3 conference in Bologna, talk "Galaxies in the central regions of simulated galaxy clusters"

07/2022
RAS National Astronomy Meeting (NAM, University of Warwick, UK) invited talk "Galaxies in the central regions of simulated galaxy clusters"

07/2022
Cosmology from Home talk "Galaxies in the central regions of simulated galaxy clusters"

2020
CSC and NVIDIA virtual hackaton with code Gadget3

2020
OpenACC Summit (virtual, 2020) invited talk "Bringing Zoom-In Initial Conditions of Cosmological Simulations on GPUs "

01/2020
HydroSim meeting (hydrodynamic simulation meeting, Munich) hosted by Dr. Klaus Dolag at Munich Observatory

2019
ParCo (Prague) presenting paper "Gadget3 on GPUs with OpenACC"

2018
GPU Technology Conference (GTC, Munich) invited poster "Gadget3 (N-Body gravity + SPH) on GPUs"

2018
EnviroInfo (Munich) invited poster "A web portal for large cosmological simulation data visualization and post processing"

2017
EuroHack (Lugano) workshop on OpenACC at CSCS

2016
Perspectives of GPU in science (Rome) poster "A multi node Barnes Hut solver on GPUs for Gadget3"

2016
HydroSim (Trieste) workshop on hydrodynamic simulations

2016
Astronomical Data Analysis Software and Systems (ADASS, Trieste) talk "A web interface to federalize the outcome of large, cosmological, hydrodynamic simulations"

2015
EuroHack (Lugano) workshop on OpenACC at CSCS

2015
International Conference on Parallel Computing (ParCo, Edinburgh) talk "Exploiting the Space Filling Curve Ordering of Particles in the Neighbour Search of Gadget3"

2015
Computational Solar and Astrophysical Modeling (Jülich) workshop

REWIEVER

MNRAS

Astronomy & Computing (A&C)

NETWORKS AND MEMBERSHIPS

Darkium collaboration on Self-Interacting Dark Matter

Dianoga simulations (PI Dr. Klaus Dolag, Dr. Elena Rasia, Dr. Stefano Borgani)

Magneticum simulations (PI Dr. Klaus Dolag)

Member of Cluster mass-observable relation Euclid key project

Euclid Consortium member of the Cluster Science Working Group

COMPUTING TIME

2023
PI PLEIADI Bologna project "SIDM vs CDM 2 " 400 000 hours

2023
collaborator CINECA account LEAP_041 (PI Dr. Milena Valentini) 100 000 hours

2022
PI PLEIADI Trieste project "SIDM vs CDM" 466 000 hours

2023
collaborator INAF computing time account INA23_C9B06 (PI Dr. Elena Rasia) 550 000 hours

2021
collaborator CINECA Iscra B account IsB24_HRCLUS (PI Dr. Luca Tornatore) 704 000 hours

2021
collaborator INAF computing time INA21_C8A63 (PI Dr. Tiago Castro) 480 000 hours

2020
collaborator INAF computing time INA20_C7A68 (PI Dr. Elena Rasia) 400 000 hours

2021
collaborator CINECA Iscra B IsB22_ECOCLUS (PI Dr. Giuseppe Murante) 750 000 hours

2019
collaborator CINECA Iscra B IsB18_SimClus (PI Prof. Stefano Borgani) 500 000 hours

2017
collaborator INAF computing time INA17_C5A46 (PI Prof. Stefano Borgani) 186 000 hours

PUBLICATIONS AND PROCEEDINGS

2023

Redshift evolution of the baryon and gas fraction in simulated groups and clusters of galaxies, Angelinelli, M., Ettori, S., Dolag, K., Vazza, F., & Ragagnin, A. Astronomy & Astrophysics, Volume 675, id.A188, 15 pp. (2023A&A...675A..77R)

Weak lensing mass bias and the alignment of center proxies, Sommer, Martin W., Schrabback, Tim, Ragagnin, Antonio, & Rockenfeller, Robert eprint arXiv:2306.13187 (2023A&A...671A.100E)

Impact of H_2-driven star formation and stellar feedback from low-enrichment environments on the formation of spiral galaxies, Valentini, Milena, Dolag, Klaus, Borgani, Stefano, Murante, Giuseppe, Maio, Umberto, Tornatore, Luca, Granato, Gian Luigi, Ragone-Figueroa, Cinthia, Burkert, Andreas, Ragagnin, Antonio, & Rasia, Elena Monthly Notices of the Royal Astronomical Society, Volume 518, Issue 1, pp.1128-1147 (2022A&A...668A.188M)

2022

Cosmological simulations with rare and frequent dark matter self-interactions, Fischer, Moritz S., Brüggen, Marcus, Schmidt-Hoberg, Kai, Dolag, Klaus, Kahlhoefer, Felix, Ragagnin, Antonio, & Robertson, Andrew Monthly Notices of the Royal Astronomical Society, Volume 516, Issue 2, pp.1923-1940 (2022A&A...666A..22R)

Galaxies in the central regions of simulated galaxy clusters, Ragagnin, Antonio, Meneghetti, Massimo, Bassini, Luigi, Ragone-Figueroa, Cinthia, Granato, Gian Luigi, Despali, Giulia, Giocoli, Carlo, Granata, Giovanni, Moscardini, Lauro, Bergamini, Pietro, Rasia, Elena, Valentini, Milena, Borgani, Stefano, Calura, Francesco, Dolag, Klaus, Grillo, Claudio, Mercurio, Amata, Murante, Giuseppe, Natarajan, Priyamvada, Rosati, Piero, Taffoni, Giuliano, Tornatore, Luca, & Tortorelli, Luca Astronomy & Astrophysics, Volume 665, id.A16, 11 pp. (2022A&A...664A.179M)

Mapping òut-of-the-box' the properties of the baryons in massive halos, Angelinelli, M., Ettori, S., Dolag, K., Vazza, F., & Ragagnin, A. Astronomy & Astrophysics, Volume 663, id.L6, 8 pp. (2022MNRAS.510.4080F)

2021

Thermodynamic evolution of the z = 1.75 galaxy cluster IDCS J1426.5+3508, Andreon, S., Romero, C., Castagna, F., Ragagnin, A., Devlin, M., Dicker, S., Mason, B., Mroczkowski, T., Sarazin, C., Sievers, J., & Stanchfield, S. Monthly Notices of the Royal Astronomical Society, Volume 505, Issue 4, pp.5896-5909 (2021MNRAS.505..851F)

Cosmology dependence of halo masses and concentrations in hydrodynamic simulations, Ragagnin, Antonio, Saro, Alexandro, Singh, Priyanka, & Dolag, Klaus Monthly Notices of the Royal Astronomical Society, Volume 500, Issue 4, pp.5056-5071 (2021MNRAS.500.3462M)

2020

The DIANOGA simulations of galaxy clusters: characterising star formation in protoclusters, Bassini, L., Rasia, E., Borgani, S., Granato, G. L., Ragone-Figueroa, C., Biffi, V., Ragagnin, A., Dolag, K., Lin, W., Murante, G., Napolitano, N. R., Taffoni, G., Tornatore, L., & Wang, Y. Astronomy & Astrophysics, Volume 642, id.A37, 19 pp. (2020iSci...23j1097P)

Gadget3 on GPUs with OpenACC, Ragagnin, Antonio, Dolag, Klaus, Wagner, Mathias, Gheller, Claudio, Roffler, Conradin, Goz, David, Hubber, David, & Arth, Alexander eprint arXiv:2003.10850 (2020arXiv200303283G)

Star formation rate in simulated clusters, Rasia, E., Bassini, L., Valentini, M., Biffi, V., Borgani, S., Dolag, K., Granato, G. L., Murante, G., Ragagnin, A., Ragone-Figueroa, C., Taffoni, G., & Tornatore, L. Memorie della Societa Astronomica Italiana, v.91, p.332 (2020) (2020MarER.15304841M)

INAF Trieste Astronomical Observatory Information Technology Framework, Bertocco, S., Goz, D., Tornatore, L., Ragagnin, A., Maggio, G., Gasparo, F., Vuerli, C., Taffoni, G., & Molinaro, M. Astronomical Data Analysis Software and Systems XXIX. ASP Conference Series, Vol. 527, proceedings of a conference held (6—10 October 2019) at the Martini Plaza, Groningen, the Netherlands. Edited by Roberto Pizzo, Erik R. Deul, Jan David Mol, Jelle de Plaa, and Harro Verkouter. San Francisco: Astronomical Society of the Pacific, 2020, p.303 (2019arXiv191110892C)

2015 - 2019

2019: *Direct N-body application on low-power and energy-efficient parallel architectures,* Goz, D., Ieronymakis, G., Papaefstathiou, V., Dimou, N., Bertocco, S., Ragagnin, A., Tornatore, L., Taffoni, G., & Coretti, I. eprint arXiv:1910.14496 (2019MNRAS.486.4001R)

2017: *A web portal for hydrodynamical, cosmological simulations,* Ragagnin, A., Dolag, K., Biffi, V., Cadolle Bel, M., Hammer, N. J., Krukau, A., Petkova, M., & Steinborn, D. Astronomy and Computing, Volume 20, p. 52-67. (2016arXiv161109222R)

2016: *Extreme Scale-out SuperMUC Phase 2 - lessons learned,* Hammer, Nicolay, Jamitzky, Ferdinand, Satzger, Helmut, Allalen, Momme, Block, Alexander, Karmakar, Anupam, Brehm, Matthias, Bader, Reinhold, Iapichino, Luigi, Ragagnin, Antonio, Karakasis, Vasilios, Kranzlmüller, Dieter, Bode, Arndt, Huber, Herbert, Kühn, Martin, Machado, Rui, Grünewald, Daniel, Edelmann, Philipp V. F., Röpke, Friedrich K., Wittmann, Markus, Zeiser, Thomas, Wellein, Gerhard, Mathias, Gerald, Schwörer, Magnus, Lorenzen, Konstantin, Federrath, Christoph, Klessen, Ralf, Bamberg, Karl-Ulrich, Ruhl, Hartmut, Schornbaum, Florian, Bauer, Martin, Nikhil, Anand, Qi, Jiaxing, Klimach, Harald, Stüben, Hinnerk, Deshmukh, Abhishek, Falkenstein, Tobias, Dolag, Klaus, & Petkova, Margarita eprint arXiv:1609.01507 (2016pcre.conf..411R)

2015: *Gas Outflow Properties in Cosmological Simulations of Galaxies/ Implementation of Kinetic AGN Feedback in GADGET-3,* Barai, Paramita, Monaco, Pierluigi, Murante, Giuseppe, Ragagnin, Antonio, & Viel, Matteo Cosmological simulations: from galaxies to large scales, Proceedings of the conference held 29 June - 4 July, 2015 in Sesto (BZ) Italy. Online at: http://www.sexten-cfa.eu/en/conferences/2015/details/56-simulating-galaxies-in-a-cosmological-context-where-we-are.html, id.7 (http://www.sexten-cfa.eu/en/conferences/2015/details/56-simulating-galaxies-in-a-cosmological-context-where-we-are.html, id.6 (2015MNRAS.447..266B)

Autorizzo il trattamento dei miei dati personali presenti nel CV ai sensi dell’art. 13 d. lgs. 30 giugno 2003 n. 196 - “Codice in materia di protezione dei dati personali” e dell’art. 13 GDPR 679/16 - “Regolamento europeo sulla protezione dei dati personali”.

Le informazioni contenute nel presente "curriculum vitae et studiorum" sono rese sotto la personale responsabilità del sottoscritto, ai sensi degli articoli 46 e 47 del Decreto del Presidente della Repubblica 28 dicembre 2000, numero 445, e successive modifiche ed integrazioni, consapevole della responsabilità penale prevista dall'articolo 76 del medesimo Decreto per le ipotesi di falsità in atti e dichiarazioni mendaci.

Luogo e data:

Firma: