Postdoctoral scholar at Jet Propulsion Laboratory / California Institute of Technology / University of California, Riverside
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Research interests: numerical cosmological simulations, large-scale structure, weak gravitational lensing, galaxy clustering, covariance matrices.

Education:

Ph.D. **Physics**, Universitat Autonoma de Barcelona, Spain. July 2016
Thesis: "Producing simulated catalogs for next generation galaxy surveys".
Advisors: Prof. Pablo Fosalba, Dr. Martin Crocce.
- Developing ICE-COLA, a fast method for cosmological simulations that writes catalogs on-the-fly in the light cone format.
- Optimizing its code parameters for galaxy clustering and weak lensing.
- Comparing most of the current fast methods for producing mock catalogs.

M.A. **High Energy Physics, Astrophysics and Cosmology**, Universitat Autonoma de Barcelona, Spain. Feb 2012
Thesis: "Cluster abundance constrains on cosmological parameters using the Fisher Matrix formalism".
Advisor: Prof. Pablo Fosalba.

B.A. **Physics**, Universitat Autonoma de Barcelona, Spain. June 2010

Research Experience:

Postdoctoral scholar, Jet Propulsion Laboratory / California Institute of Technology / University of California Riverside. *Advisors*: Dr. Alina Kiessling, Prof. Bahram Mobahser, Dr. Jason Rhodes, Dr. Peter Capak. 2016 - present
- Developing a halo-galaxy model to populate dark-matter only simulations with galaxies. Studying the impact of observational systematics on observables.

Research assistant, Institut d'Estudis Espacials de Catalunya. 2015-2016
Advisors: Prof. Pablo Fosalba, Dr. Martin Crocce.
- Producing hundreds of light cone simulations with ICE-COLA (~30Tb of data).

Research assistant, Institut d'Estudis Espacials de Catalunya. 2010-2011
Advisor: Prof. Pablo Fosalba.
- Forecasting galaxy cluster constraints on cosmological parameters.

Summer Research Scholarship, Instituto de Astrofísica de Canarias. 2010
Advisor: Prof. John Beckman.
- Analysing Integral Field Unit observations of the GHαFaS instrument.

Member of the ESA/NASA Euclid mission and of the following Working Groups: Cosmological Simulations, Weak Lensing, and Galaxy Clustering.

Expertise in modifying and running N-body codes on clusters of distributed-memory multiprocessors. 1.7 Mhours of CPU-time used at the supercomputer MareNostrum III at BSC.

Refereed publications:

Izard A., Fosalba P., Crocce M., 2018. *ICE-COLA: fast simulations for weak lensing observables*, MNRAS, 473, 3051-3061.

Izard A., Crocce M., Fosalba P., 2016. *ICE-COLA: Towards fast and accurate synthetic galaxy catalogues optimizing a quasi N-body method*, MNRAS, 459, 2327-2341.

Lippich M., Sánchez A. G., Colavincenzo M., Sefusatti E., Monaco P., Blot L., Crocce M., Alvarez M. A., Agrawal A., Avila S., Balaguera-Antolínez A., Bond R., Codis S., Dalla Vecchia C., Dorta A., Fosalba P., **Izard A**., Kitaura F.-S., Pellejero-Ibanez M., Stein G., Vakili M., Yepes G., *Comparing approximate methods for mock catalogues and covariance matrices I: correlation function*, MNRAS accepted, ArXiv: 1806.09477.

Blot L., Crocce M., Sefusatti E., Lippich M., Sánchez A. G., Colavincenzo M., Monaco P., Alvarez M. A., Agrawal A., Avila S., Balaguera-Antolínez A., Bond R., Codis S., Dalla Vecchia C., Dorta A., Fosalba P., **Izard A**., Kitaura F.-S., Pellejero-Ibanez M., Stein G., Vakili M., Yepes G., *Comparing approximate methods for mock catalogues and covariance matrices II: Power spectrum multipoles*, MNRAS submitted, ArXiv: 1806.09497.

Colavincenzo M., Sefusatti E., Monaco P., Blot L., Crocce M., Lippich M., Sánchez A. G., Alvarez M. A., Agrawal A., Avila S., Balaguera-Antolínez A., Bond R., Codis S., Dalla Vecchia C., Dorta A., Fosalba P., **Izard A**., Kitaura F.-S., Pellejero-Ibanez M., Stein G., Vakili M., Yepes G., 2018, *Comparing approximate methods for mock catalogues and covariance matrices III: Bispectrum*, MNRAS submitted, ArXiv: 1806.09499.

Chuang C.H., Zhao C., Prada F., Munari E., Avila S., **Izard A**., et al., 2015, *nIFTy cosmology: Galaxy/halo mock catalogue comparison project on clustering statistics*, MNRAS 425, 686.

Other publications:

Izard A., et al., in prep., *Fast generation of mock galaxy catalogs and a study of systematics sourced by fluctuations in the density field*.

Doré O, et al. (including **Izard, A**.), 2018, *WFIRST Science Investigation Team "Cosmology with the High Latitude Survey" Annual report 2017*, ArXiv: 1804.03628.

Grants, honors and awards:

2014-2016	Co-I in 8 proposals to the Spanish Supercomputing Network, awarded with a total of 2.9e6 CPU-hrs in total to the supercomputer MareNostrum III at the Barcelona Supercomputing Center.
2011	JAE-Predoc Grant, awarded by the Spanish National Research Council for a PhD.
2006	Caixa Manresa Award to the most outstanding scores in college admissions (<1%).

Talks:

2018/06	*Jet Propulsion Laboratory*, Pasadena, USA, *contributed talk*.
2017/10	*Institut d'Estudis Espacials de Catalunya*, Barcelona, Spain, *contributed talk*.
2017/06	*Euclid consortium meeting*, London, UK, *contributed talk*.
2017/05	*Infrared Processing and Analysis Center*, Pasadena, USA, *contributed talk*.
2017/03	*Jet Propulsion Laboratory*, Pasadena, USA, *contributed talk*.
2016/06	*Euclid consortium meeting*, Lisbon, Portugal, *contributed talk*.

2015/11 *Institut d'Estudis Espacials de Catalunya*, Barcelona, Spain, *contributed talk*.
2014/07 *Instituto de Física Teórica*, Madrid, Spain, *invited talk*.
2014/03 *Institut of Space Sciences*, Barcelona, Spain, *contributed talk*.
2014/02 *University of Barcelona*, Spain, *contributed talk*.

Public service & outreach:

A total of 16 outreach talks in universities (University of California Riverside), amateur astronomical societies (Sabadell Astronomical Group, Astronomical Association of Torroja del Priorat), high schools (I.E.S. Berenguer d'Entença, I.E.S. Pau Vila) and other organizations (University extension courses of Sant Quirze del Vallès).
Organizer & lecturer of a 10h course in cosmology in the Sabadell Astronomical Group.
Former member of the Sabadell Astronomical Group board, former leader of its young group and organizer of public telescope viewings.

Computer skills:

Highly competent in: Python, C/C++, Fortan 90/95, Matlab, Unix shell scripting, MPI parallel processing library, OpenMP, LaTeX, FFTW libraries, working on HPC platforms, git.
Extensive usage of the following softwares: Gadget-2, N-GenIC, PINOCCHIO, Healpix, CAMB.
Developer of ICE-COLA, a parallel C code for cosmological simulations that writes catalogs on-the-fly in the light cone format.

References:

Dr. Alina Kiessling
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