
Dr. Stefano Orani

EMAIL: stefano.orani@gmail.com
WEBSITE: <https://osteso.github.io>

Relevant expertise: Machine learning, mathematical modelling, statistical analysis and programming (Python, R, matlab, C++), database technology (PostgreSQL, CosmoDB), problem-solving.

Relevant experience: Developed solutions for business and engineering using machine learning, worked with international teams, led research projects, author of 10+ articles published in peer-reviewed scientific journals, experienced public speaker (presentations, seminars).

Work Experience

SINCE 09/2017	Consultant/Data Scientist , Altran Data Analytics, Brussels, Belgium Internal: developed Natural Language Processing application for analysis of CVs and job descriptions. Internal expert for use cases of machine learning technologies. Clients: OEM sector Developed of solutions for connected cars, using advanced statistical analysis and machine learning (R, python, SQL). Examples of developed solutions: Trip speed profile prediction leading to 5% decrease in fuel consumption. Trip destination prediction to enable destination related services.
04/2013 TO 07/2017	PostDoc/Assistant , University of Basel, Switzerland Research in theoretical physics/cosmology Mathematical modelling of the early universe. Developed numerical codes to solve partial differential equations. Developed statistical analysis tools to extract predictions. Published research in peer-reviewed academic journals. Created and taught a Masters' course on <i>Early Universe Physics</i> . Supervised PhD and Masters' students.

Education

10/2009 TO 07/2013	PhD in Theoretical Physics , Imperial College London, UK Thesis: <i>Cosmological Perturbations from Hybrid Potentials</i> PhD advisor: Prof. Arttu RAJANTIE Mathematical modelling of the early universe. Published research in peer-reviewed academic journals.
09/2009	MSc in Theoretical Physics , Imperial College London, UK
07/2008	BSc in Physics , Université Libre de Bruxelles, Belgium
FALL 2007	Exchange Semester at Université de Montréal, Canada
07/2004	European School of Brussels II, Brussels, Belgium

Languages

ENGLISH: fluent	ITALIAN: native	GERMAN: basic
FRENCH: fluent	GREEK: fluent	SPANISH: conversational

List of publications

Link to publications on [inSPIRE](#)

- [1] S. Antusch, F. Cefala and S. Orani,
What can we learn from the stochastic gravitational wave background produced by oscillons?,
JCAP **1803** (2018) **no.03, 032**, [arXiv:1712.03231 \[hep-th\]](#).
- [2] S. Antusch, F. Cefala, S. Krippendorff, F. Muia, S. Orani and F. Quevedo,
Oscillons from String Moduli,
JHEP **1801** (2018) **083**, [arXiv:1708.08922 \[hep-th\]](#).
- [3] S. Antusch, F. Cefala and S. Orani,
Gravitational waves from oscillons after inflation,
Phys.Rev.Lett. **118** (2017) **no.1, 011303**, [arXiv:1607.01314 \[astro-ph.CO\]](#).
- [4] S. Antusch and S. Orani,
Impact of other scalar fields on oscillons after hilltop inflation,
JCAP **1603** (2016) **03, 044**, [arXiv:1511.02336 \[hep-ph\]](#).
- [5] S. Antusch, F. Cefala, D. Nolde and S. Orani,
Parametric resonance after hilltop inflation caused by an inhomogeneous inflaton field,
JCAP **1602** (2016) **02, 026**, [arXiv:1510.04856 \[hep-ph\]](#).
- [6] S. Antusch, D. Nolde and S. Orani,
Hill crossing during preheating after hilltop inflation,
JCAP **1506** (2015) **06, 009**, [arXiv:1503.06075 \[hep-ph\]](#).
- [7] S. Antusch, F. Cefala, D. Nolde and S. Orani,
False vacuum energy dominated inflation with large r and the importance of κ_s ,
JCAP **1410** (2014) **10, 015**, [arXiv:1406.1424 \[hep-ph\]](#).
- [8] S. Antusch, D. Nolde and S. Orani,
Hilltop inflation with preinflation from coupling to matter fields,
JCAP **1405** (2014) **034**, [arXiv:1402.5328 \[hep-ph\]](#).
- [9] J. Elliston, S. Orani and D. J. Mulryne,
General analytic predictions of two-field inflation and perturbative reheating,
Phys.Rev. **D89** (2014) **10, 103532**, [arXiv:1402.4800 \[astro-ph.CO\]](#).
- [10] S. Orani,
Cosmological Perturbations from Hybrid Potentials,
PhD thesis, [arXiv:1308.5525 \[astro-ph.CO\]](#).
- [11] S. Orani and A. Rajantie,
Supersymmetric hybrid inflation with a light scalar,
Phys.Rev. **D88** (2013) **043508**, [arXiv:1304.8041 \[astro-ph.CO\]](#).
- [12] D. Mulryne, S. Orani and A. Rajantie,
Non-Gaussianity from the hybrid potential,
Phys.Rev. **D84** (2011) **123527**, [arXiv:1107.4739 \[hep-th\]](#).

Conference contributions and seminars

1	WCC ALTRAN CONFERENCE 2018 UK, 16-17/05/2018	invited speaker on machine learning and IOT
2	SWISS COSMOLOGY DAYS 2017 UNIVERSITY OF BASEL, 06-07/02/2017	Organizer presentation based on [3]
3	PROBING THE EARLY UNIVERSE WITH GRAVITY APC, PARIS, 23-25/11/2016	presentation based on [3]
4	QUEEN MARY UNIVERSITY OF LONDON LONDON, 09/11/2016	invited seminar based on [3]
5	LISA COSMOLOGY WG MEETING 2016 DESY, HAMBURG, 17-21/10/2016	presentation based on [3]
6	UNIVERSITÉ CATHOLIQUE DE LOUVAIN LOUVAIN-LA-NEUVE, 18/05/2016	invited seminar based on [4]
7	RWTH AACHEN, 22/01/2016	invited seminar based on [5]
8	28 th TEXAS SYMPOSIUM 2015 GENEVA, 14-18/12/2015	presentation based on [5]
9	COSPA MONS, 20/05/2015	presentation based on [6]
10	SWISS COSMOLOGY DAYS 2015 GENEVA, 06-07/02/2015	presentation based on [6]
11	PARTICLE COSMOLOGY AFTER PLANCK DESY, HAMBURG, 23-26/09/2014	presentation based on [7]
12	IMPERIAL COLLEGE LONDON LONDON, 09/05/2014	invited seminar based on [8]
13	UNIVERSITÉ DE NAMUR NAMUR, 17/01/2014	invited seminar based on [8]
14	PASCOS 2013 TAIPEI, 20-26/11/2013	presentation based on [11]
15	QUEEN MARY UNIVERSITY OF LONDON LONDON, 16/01/2013	invited seminar based on [11] and [12]
16	UNIVERSITY OF BASEL BASEL, 16/10/2012	invited seminar based on [11] and [12]
17	WORKSHOP ON NON-EQUILIBRIUM FT IN COSMOLOGY, LONDON, 20-21/09/2012	Organizer presentation based on [12]
18	LCDM, KCL LONDON, 24/05/2012	presentation based on [12]
19	HELSINKI INSTITUTE OF PHYSICS HELSINKI, 24/01/2012	invited seminar based on [12]
20	UKCOSMO, ICG PORTSMOUTH, 14/09/2011	presentation based on [12]
21	COSMO 2011 PORTO, 22-26/08/2011	poster based on [12]