Lorenzo Mansi

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Professional Summary

A quick learner and meticulous Ph.D. candidate in Theoretical and Mathematical Physics, eager to apply his analytical and problem-solving skills to real-world challenges. Adept at bridging abstract thinking and practical applications. Proficient in Python, Mathematica, and state-of-the-art machine learning techniques. Equally effective in team and leadership roles, managing multidisciplinary projects and mentoring team members.

Education

Ph.D. in Theoretical and Mathematical Physics — **Hamburg**
Universät Hamburg and DESY — *2022–Present*
Focus on Geometric Invariant Theory and Combinatorics techniques applied to the study of vacua of supersymmetric theories in various String Theory-engineered models.

MSc in Physics — **London**
Imperial College London, First Class — *2021–2022*
Core Modules: (Advanced) Quantum Field Theory, Programming Skills, Supersymmetry, Unification, Standard Model & Beyond.
Thesis: "Construction of $6d$ $\mathcal{N} = (1, 0)$ SCFTs and Higgs Branch Hasse Diagram".

BSc in Physics — **Pisa**
Università di Pisa, 110/110 cum laude — *2018–2021*
Core Modules: Programming, Linear Algebra, Mathematical Methods, Complex Analysis, Quantum Mechanics, Group Theory, Laboratory (Statistics and Probability).
Thesis: "Distribution for products in asymmetric e^+e^- collider: an example in B and L violating τ decay".

Experience

Graduate Researcher — **Hamburg**
Deutsches Elektronen–Synchrotron DESY — *2022-Present*

- Researcher in String Theory: algebraic geometry, representation theory.
- Mentoring younger researchers: Guido Bonori (Ph.D. student).
- Volunteering IT member, help-desk role.
- Science communication.

Skills

Programming: Python (numpy, pandas, pytorch, pytorch geometric, networkx), Mathematica, LaTeX

Publications

– "*Detecting Homeomorphic 3-manifolds via Graph Neural Networks*", C. Lawrie and L. Mansi, ArXiV:[2409.02126], [cs.LG, hep-th].
– "*The Higgs Branch of 6d (1,0) SCFTs & LSTs with DE-type SUSY Enhancement*", C. Lawrie and L. Mansi, ArXiV:[2406.02670], [hep-th].
– "*Unravelling T-Duality: Magnetic Quivers in Rank-zero Little String Theories*", L. Mansi and M. Sperling, ArXiV:[2312.12510], [hep-th].
– "*The Higgs Branch of Heterotic LSTs: Hasse Diagrams and Generalized Symmetries*", C. Lawrie and L. Mansi, Physical Review. D., 110(2), DOI: 10.1103/PhysRevD.110.026016, [hep-th].

Invited Speaker

– *"The Higgs Branch of minimally supersymmetric 6d SCFTs Higgsable to $(2, 0)$ theories"*, Quiver Meeting, Youtube Recording. — *Jul 2024*
– *"The Higgs Branch of Heterotic LST: Hasse Diagrams and Higher Form Symmetries"*, Theory Workshop, DESY. — *Sep 2023*
– *"An introduction to the Standard Model and Beyond"*, I.I.S. "Ettore Majorana". — *May 2023*

Awards

Outstanding Performance in the MSc Prize, Highest graduating average in my cohort (86.3%). — *2022*
Medaglia del Cherubino, prize for the graduating with the highest mark in BSc. — *2021*
Riduzione per Merito, tax deduction for being consistently in the top 30 people in my cohort. — *2018–2021*

Languages

Italian: Mother tongue **English**: Full working proficiency **Spanish**: Intermediate **German**: Basic