



Newsletter from Philippe Meyer Institute for Theoretical Physics

January 2022

Since 2012

The Philippe Meyer - ENS partnership foundation was initially established in 2012 for a first 5-year period and then renewed for another 5 years. We are proud to announce that the foundation has just been renewed for another 3 years till the end of 2024.

We are also happy to see that despite some leftover impact due to the remaining sanitary restrictions the situation and functioning of research and teaching at the ENS in general and within the Philippe Meyer Institute in particular is almost back to normal.

This year we have another call for the Philippe Meyer Prize in Theoretical Physics in the field of "Theoretical High Energy and Elementary Particle Physics". We hope that the award ceremony at the end of the year will be an in-person ceremony !

Lorenzo PIROLI

Lorenzo Piroli joined the institute in September 1st, 2021. After obtaining his PhD at SISSA (Trieste, Italy) in 2018, he became a postdoc at the Max-Planck Institute of Quantum Optics (Garching, Germany), where he also obtained a Humboldt Research Fellowship for postdoctoral researchers. During his PhD, Lorenzo's research focused on quantum integrable systems out of equilibrium. Among other questions, he was particularly interested in developing analytical tools to describe the many-body dynamics and understanding the absence of thermalization. He also contributed to the development of a new hydrodynamic theory of integrable systems.

During his post-doc at the Max-Planck Institute of Quantum Optics, he has worked on the characterization of discrete models for the many-body dynamics (quantum cellular automata) within the framework of tensor networks. Together with his collaborators, he has shown, for instance, that all discrete dynamics respecting causality necessarily admit an efficient description in terms of tensor networks. He also contributed to apply tensor-network techniques to solve special families of discrete quantum circuit models. Currently, in addition to his previous research interests, Lorenzo is also studying different models of stochastic dynamics in quantum many-body systems.



Nat LEVINE

Nat Levine began his postdoc in October 1st, 2021 after finishing his PhD at Imperial College London.

Nat is studying integrable sigma-models, motivated by the search for solvable string backgrounds. In particular, he is interested in the special behaviour of integrable models under the quantum RG flow: namely, they are found to be stable, or renormalizable. This pattern has been widely observed at the leading 1-loop order. Demanding renormalizability also at higher orders then gives a natural prescription for quantum corrections to the sigma-model's target space geometry.



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