

# About Me – Giuseppe Clemente

## First steps and change of trajectory

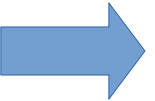
Born in 1993 in Palermo (Sicily), finished studying to be a professional musician, but



Moved to Pisa in 2012 to study physics



I studied for 8 years there, PhD included, Very intense and fruitful years.



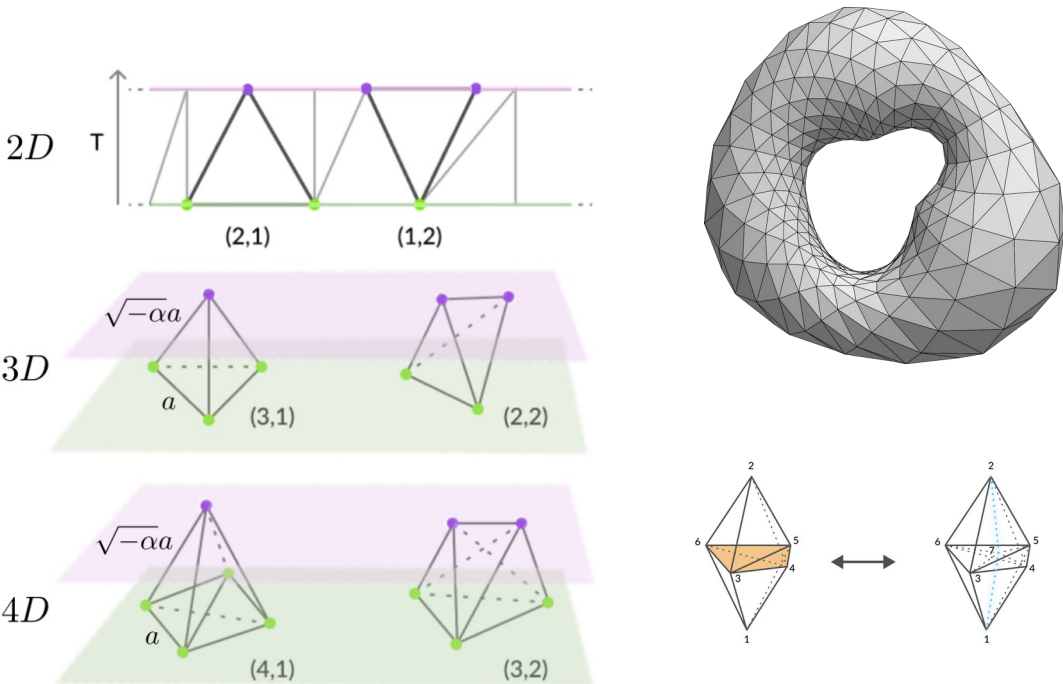
# The Start of My Path in Research

Exploring different topics and techniques

Master time

Thesis title:  
“New Directions in Causal Dynamical Triangulations”

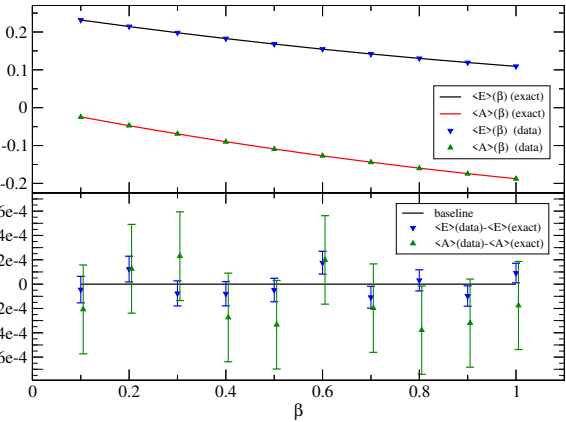
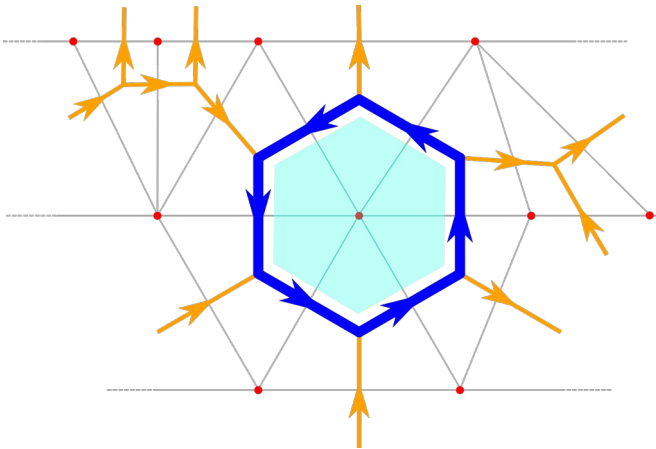
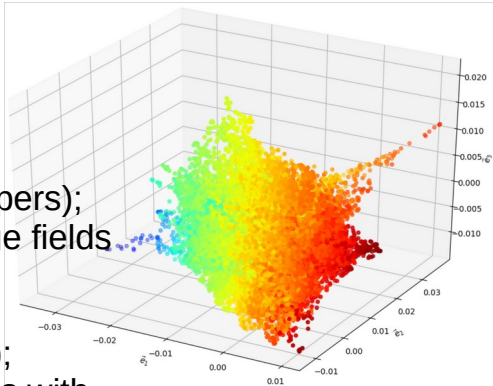
Monte Carlo approach to Quantum Gravity  
based on Weinberg’s asymptotic safety idea.



PhD time

Thesis title:  
“Spectral Methods in Causal Dynamical  
Projects:

- Spectral analysis of CDT configurations (3 papers);
- Minimal coupling of CDT with Yang-Mills gauge fields (1 paper);
- [side project] Spectral analysis of staggered Dirac operator for topology of QCD (2 papers);
- [side project] Computation of thermal averages with Quantum Computing techniques [I wrote my own QC simulator: public version: SUQA] (1 paper)





# Recent and Current Work

## Postdoc time and challenges

### The Netherlands

1 year position with the Quantum Gravity group at Radboud University (Nijmegen) started in November 2021.

Unfortunately spoiled by the lack of human interactions for several months due to the second national lockdown... but very nice environment in the remaining months!

#### Finished/current projects:

- With collaborators there, we are trying to characterize the emergence of structures (like black-holes) from pure gravity simulations without matter as emergent mass distributions by inspecting local curvature.

**Very ambitious and still work in progress, but first draft hopefully finished soon.**

### Germany

2 year position at DESY – Zeuthen started in November 2022 (currently on my 2<sup>nd</sup> year).

Also this spoiled by the lack of human interactions, this time forced by other people at work, and by Berlin people's hospitality outside work...

#### Finished/current projects:

- Contributed to some projects within the ZPPT and CQGA group in Zeuthen last year (1 paper + 2 drafts under peer review[?]);
- Now currently actively collaborating with people in Pisa and Nijmegen on Quantum Gravity (1 project), QCD ( $n \geq 1$  projects) and Quantum Computing ( $n \geq 4$  projects).
- I started creating a group of collaborators on Quantum Research in Pisa, where anybody, from master students to full professors, is treated fairly and equally without biases and power abuse.

**Current challenges for me involve having access to networking opportunities.**

# Some Favourite Plots

It is not pretty, but this one inspires me not to give up: even if sometimes we don't get interest or positive feedback, what we do could be relevant at some point (even if you may be already dead by then), so just believe in yourself and do your best in what you are good.

## About the Pauli exclusion principle

Pascual Jordan (Gottingen U.), Eugene P. Wigner (Gottingen U.)

Jan, 1928

21 pages

Published in: Z.Phys. 47 (1928) 631-651

DOI: 10.1007/BF01331938

View in: ADS Abstract Service

[links](#) [cite](#) [claim](#)

## Citations per year

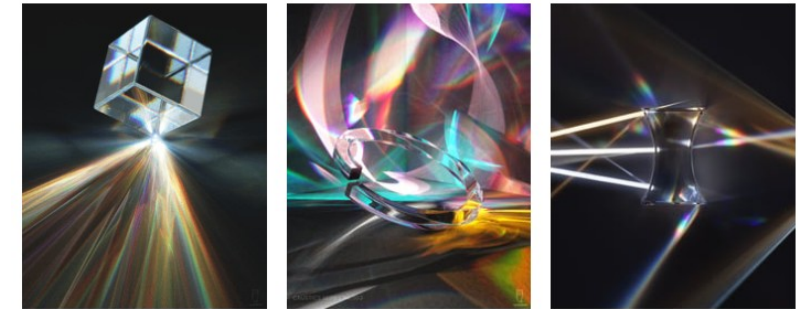
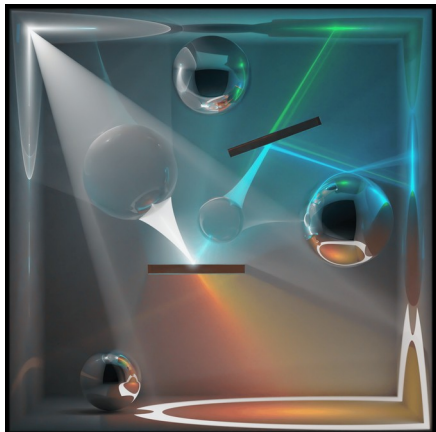


Figure 9: Various examples of KeyShot's ability to accurately refract light through prisms of different sizes and shapes. Images: David Merz.



Another thing that amazes me are **caustics** and the challenge of real-time rendering them!

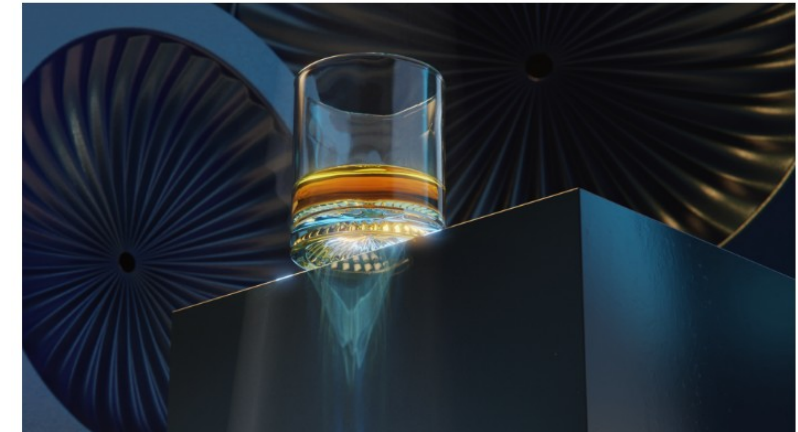


Figure 10: Caustics visualized in KeyShot of light refracting through the bottom of a whiskey tumbler. Image: David Merz