Plan Overview

A Data Management Plan created using DeiC DMP

Title: Beyond Rationality in Algebraic CFT: mathematical structures and models

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Funder: European Commission

Template: ERC Data Management Plan Template

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Project abstract:

Conformal Field Theory (CFT) in low dimensions is one of the most active branches of modern physics, it is amenable to rigorous "axiomatic" formulations, hence it is naturally connected to various areas of mathematical research. For example, to CFTs one can associate braided tensor categories (describing superselection sectors, defects, topological field theories) and subfactors, i.e., inclusions of von Neumann algebras with trivial center (describing extensions, duality properties and exotic charge localizations). All these areas are independently pairwise correlated, e.g., subfactors with CFTs, subfactors with tensor categories, and they have their own history and an extremely profound literature. The aim of my research project is to analyze models of CFT, together with the associated mathematical objects, which are not necessarily "rational", i.e., which may admit infinitely many superselection sectors ("particle" excitations of the vacuum). Examples of non-rational CFTs (which are the majority among all CFTs) come from Virasoro minimal models with central charge bigger than one (there are continuously many), and global gauge theories with respect to a compact non-finite group of internal symmetries. Non-rationality of a CFT also implies that the "size" of the associated categories and subfactors have to be infinite, namely one is led to consider categories with infinite spectrum and subfactors with infinite Jones index. These mathematical objects are natural generalizations of their "finite" counterparts (modular and fusion categories, finite index subfactors), they are physically motivated, but they attracted the attention of researchers only in recent times. This research project aims to study structural properties of non-rational CFTs using modern machinery (e.g., generalized Q- systems, ind-categories, planar algebras), to study infinite braided tensor categories and infinite index subfactors arising from them, and exploit their interplay.

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Summary

dataset reference and name

No data in the form of computer simulations, databases, experimental or empirical records will be created/accessed to/collected/shared during this project, nor datasets will underly the published material, as far as I can foresee at the moment and referring to my previous experience.

origin and expected size of the data generated/collected

aaa

data types and formats

aaa

Making Data Findable

dataset description: metadata, persistent and unique identifiers e.g., DOI

aaa

Making Data Openly Accessible

which data will be made openly available and if some datasets remain closed, the reasons for not giving access

aaa

where the data and associated metadata, documentation and code are deposited (repository?)

aaa

how the data can be accessed (are relevant software tools/methods provided)?

aaa

Making Data Interoperable

which standard or field-specific data and metadata vocabularies and methods will be used

aaa

Increase Data Re-Use

what data will remain re-usable and for how long, is embargo foreseen

aaa

how the data is licensed

aaa

data quality assurance procedures

aaa

Allocation of Resources and Data Security

estimated costs for making the project data open access and potential value of long-term data preservation

aaa

procedures for data backup and recovery

aaa

transfer of sensitive data and secure storage in repositories for long term preservation and curation

aaa