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Vertex Algebras and W-Algebras

It is believed that many important phenomena in nature, including critical phenomena, can be described by conformal field theories (CFTs).

More importantly, deep understanding of CFTs might lead to technologies for the design of a new kind of computer called "topological quantum computer", a yet-to-be-constructed device for computation that makes direct use of quantum mechanical phenomena.

The award supports theoretical research at the interface of two-dimensional conformal field theory and mathematics (especially algebra). We plan to classify symmetries of various physical models by using tools of representation theory. This award also provides support for graduate students.