



## Second Laureate Fundamental Research

- ◆ **Project Title:** Conformal Field Theory
- ◆ **Researcher:** Shahin Rouhani (Ph.D.)



### Abstract:

In this project conformal field theory and in a wider setting conformal invariance has been studied. Mathematically conformal mapping is a mapping that preserves angles. Usually this is a mapping between two domains in the complex plane. A conformal field theory (CFT) is a quantum field theory that is invariant under conformal transformations. Conformal field theory is often studied in two dimensions where there is an infinite-dimensional group of local conformal transformations, described by the holomorphic functions. Conformal field theory has important applications in string theory, statistical mechanics, and condensed matter physics in particular critical phenomena. In my work developments were made to the theory of conformal field theory itself in particular the logarithmic conformal field theory (LCFT), and in its application to critical phenomena, namely turbulence, the Schramm Loewner evolution (SLE) and surface growth. A logarithmic conformal field theory is one in which a Jordanian form is used in representation of the Virasoro algebra is realized. The Schramm Loewner evolution (SLE) is a stochastic process which has a conformally invariant distribution. I and coworkers were the first to report an SLE in experimentally grown surfaces.