Complex fractional differential operators geometrical phase transition and Riemann Conjecture

Le Méhauté A., Tayurskii D.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The authors show the existence a bi univocal application between Riemann zeta functions and dynamic processes under the control of Non Integer Differential Operator. They show that, in the Fourier space, Riemann zeta function is related to hyperbolic geodesics with angles at infinity determined by the non integer parts of the power laws. The authors assert that Riemann Conjecture can be considered as a geometrical phase transition based upon the cancelation of the geometrical symmetries at infinity. A quasi self similarity of the zeta functions is associated to the self similarity of the dynamics. This characteristic assures the validity of the Riemann conjecture. © 2013 IFAC.

Keywords