ICTS Skype Seminar

Title   : Splay states and Chimera states in globally coupled Sine Circle map lattices

Speaker   : Joydeep Singha , Indian Institute of Technology, Madras

Date   : Monday, July 8, 2019

Time   : 4:00 PM

Venue   : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract :   Globally coupled map lattice (GCML) models are useful to understand the behaviours and patterns found in complex systems having large degrees of freedom. I will discuss a specific GCML having two populations of identical sine circle maps and explain the nature of the splay phase state and the chimera state, both of which have practical significance in the context of coupled oscillator systems. I will show that pure splay states are temporally chaotic and transform to a splay-chimera states with the change of parameters. Chimera states having spatiotemporally intermittent (STI) structures are found in this system evolving from random initial conditions. I will discuss the linear stability analysis to show that they are hyperchaotic in nature. Their basin stability is numerically estimated, that shows the multistable nature of the model. Further inferences regarding the STI structures will be obtained via construction of an equivalent cellular automaton of the GCML.