

Abstract

The dynamics of an isolated nonlinear system, governed by differential equations or discrete map equation, has provided many surprising and exciting results for the last several decades. Here we consider a large interactive network of such nonlinear systems. As commonly found in nature, such complex networks are neither fully regular nor fully random. Instead they have varying degrees of randomness in their connectivity. Specifically, we consider the spatiotemporal behavior of a collection of nonlinear elements on a small-world networks. We observe interesting collective behavior in our complex network, such as spatiotemporal synchronization, a phenomenon prevalent in nature, with examples ranging from fireflies and pacemaker cells to laser systems.