

On the mathematical analysis of Synchronization theory

Chun-Hsiung Hsia

Department of Mathematics, National Taiwan University
E-mail: willhsia@math.ntu.edu.tw

Abstract

Synchronization is a pervasive phenomena which has been observed in biological, chemical, physical and social systems. The first reported observation of synchronization dates back to the 17th century; a Dutch scientist, Christiaan Huygens has discovered in 1665 that two pendulum clocks hanging on the wall have always ended up swinging in exactly the opposite direction from each other. Since then, various synchronization phenomena have been reported. These include circadian rhythms, chirping crickets, flashing fireflies, croaking frogs, electrical generators, Josephson junction arrays, intestinal muscles and menstrual cycles. In this talk, we shall introduce the recent development of the mathematical theory of synchronization.