東北大学大学院情報科学研究科
純粋・応用数学研究センター

情報数理談話会のお知らせ

日　時： 2018 年 12 月 21 日㈮ 16:00 より 17:00 まで
　　　　 (会場にお茶を用意しております)
場　所： 東北大学大学院情報科学研究科棟 2 階大講義室

講演者： 吉江 佑介 氏 (東北大学大学院情報科学研究科)
題　目： Graph structure characterized by periodic discrete-time quantum walks
備　考： この情報数理談話会は課程博士予備審査会を兼ねています

[概 要] A quantum walk is regarded as a quantum analog of a random walk and is applied to various problems such as quantum searching, element distinctness, the graph-isomorphism problem and so forth. Unlike a random walk, the dynamics of a quantum walk is interpreted as a wave propagation on the underlying graph of which the time evolution is defined by a unitary operator. A quantum walk often exhibits specific characteristics which cannot be seen in a random walk. Periodicity is one of the most significant characteristics of quantum walks. We are interested in what kind of graph structure makes the behavior of the quantum walk periodic. In this paper, we derive conditions of graph structure which gives rise to a periodic quantum walk by means of spectral analysis. In addition, we characterize several classes of graphs which admit a periodic quantum walk and introduce several graph-operators preserving the periodic behavior.

ホームページ：http://www.math.is.tohoku.ac.jp/research/colloquium.html