1135-60-1415 **Nobuaki Obata*** (obata@math.is.tohoku.ac.jp), Sendai, 980-8579, Japan. *Asymptotic spectral analysis of graphs and orthogonal polynomials in two variables.*

During the last fifteen years the quantum probabilistic methods have been developed for asymptotic spectral analysis of (growing) graphs, see e.g., N. Obata: Spectral analysis of growing graphs - A quantum probability point of view, Springer, 2017. One of the main tools is the so-called *method of quantum decomposition*, which makes it possible for us to study the adjacency matrices of graphs in terms of creation and annihilation operators in interacting Fock spaces. Using these quantum probabilistic structure we may obtain asymptotic spectral distributions as orthogonalizing measures of certain polynomials determined by three-term recurrence relation. Many examples of (growing) graphs have been studied in this line so far, however, there is a crucial restriction caused by the use of orthogonal polynomials in one variable. In this talk, reviewing the old result on limit distributions of growing Hamming graphs, I will discuss a two-variable extension by means of strongly regular graphs, and show an example which yields mixture of Gaussian and Poisson distributions. (Received September 22, 2017)