## Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

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## Title: S-transform and subordination functions for free multiplicative convolution on the real line

Free multiplicative convolution is a fundamental notion in free probability. From the analytical viewpoint, two main analytical tools are used to study this convolution: the S-transform and subordination functions. Starting from works of Voiculescu and Biane, these tools have been developed in more and more generality by various authors. However, in the most general case i.e., free multiplicative convolution of a measure on the real line and a measure on the positive real line, these tools were still missing. In this talk, I will explain a definition of S-transform and subordination functions in this general setting. The definition of S-transform is very different from the previous methods. We also present applications of these findings including regularity properties of free multiplicative convolution, such as the absence of singular continuous part and analyticity of the density, and some convolution identities for boolean and free stable laws which were only known for the positive and symmetric cases. The talk is based on joint work with Takahiro Hasebe and Yu Kitagawa.