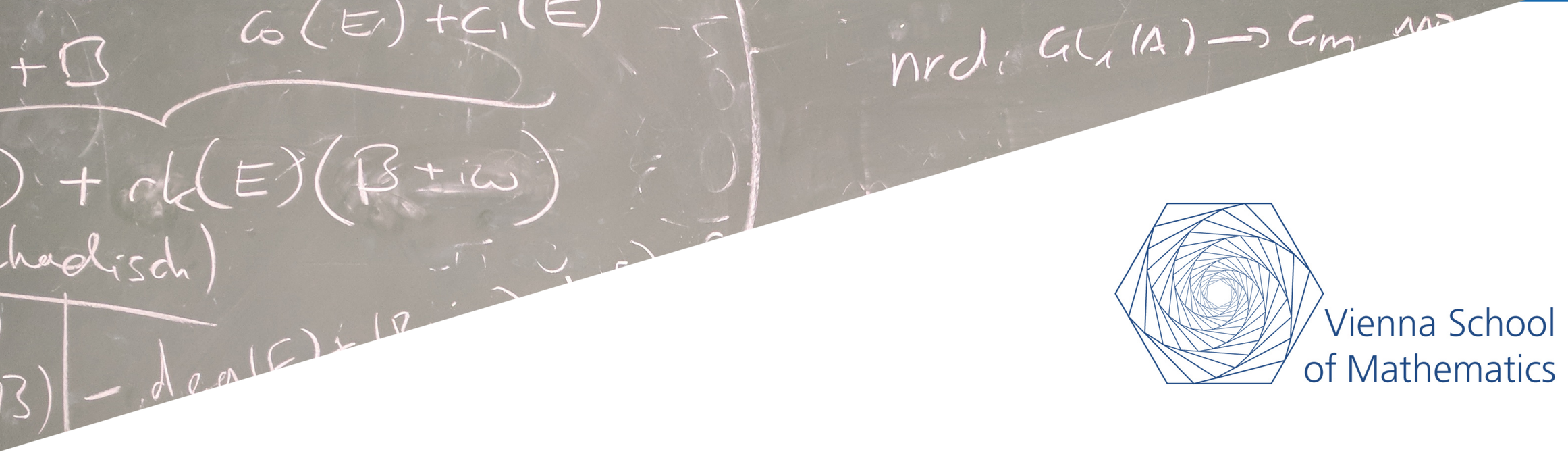

Vienna School of Mathematics

PhD Colloquium

Mikhail Karapetyants

An interesting application of an otherwise not so interesting theory

This talk is a brief overview of two fields of mathematics: the theory of so-called subdivision schemes, which are used for approximation of functions and generation of curves, and dyadic analysis, in particular dyadic harmonic analysis. In the classical case, for functions defined on the real line, the theory of subdivision schemes is widely known due to multiple applications in constructive approximation theory, signal processing as well as for generating fractal curves and surfaces. Subdivision schemes on the dyadic half-line – the positive half-line, equipped with the standard Lebesgue measure and digitwise binary addition, where the Walsh functions play the role of exponents – were defined and studied relatively recently. We will discuss the most natural problem which arises while studying any approximation algorithms, namely, necessary and sufficient convergence conditions. We will also talk about a curious application of subdivision schemes to the theory of fractal curves on the dyadic half-line. Finally, numerical examples and possible applications of dyadic subdivision to approximation theory, wavelet theory and computer graphics will be presented for ~~those who do not care about the theory and love fancy pictures~~ better understanding of the theoretical results.

19. October

14:00 - 14:45

Sky Lounge, OMP-1