FERMIONS AND PERTURBATION THEORY OF STRONGLY CONTINUOUS SEMIGROUPS

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ABSTRACT. In this talk I will explain an algebraic machinery based on Fermionic integration, which basically allows to rewrite expressions of the form

$$\int_{t\sigma_n} e^{-s_1 H} P_1 e^{-(s_2 - s_1) H} P_2 \cdots e^{-(s_n - s_{n-1}) H} P_n e^{-(t - s_n) H} \, ds_1 \dots ds_n, \quad t \ge 0,$$

as strongly continuous semigroups. Here, $H \ge 0$ is an unbounded selfadjoint operator and each P_j is an unbounded possibly non-selfadjoint operator. Applications to noncommutative geometry (and if time admits: loop space geometry) will also be presented. This is joint work with Jonas Miehe.

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