MAFIA - the seminar you can't refuse

Representation of non-semibounded quadratic forms and orthogonal additivity

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Abstract: Representation theorems are useful tools in characterising and dealing with the mathematical objects they are related with. One famous example is the spectral theorem for (unbounded) self-adjoint operators, that allows to work with operators on a Hilbert space as if they were multiplication operators on a space of square integrable functions.

We will provide a representation theorem for non-semibounded Hermitian quadratic forms based on a decomposition in terms of a direct integral of the Hilbert space and the notion of orthogonal additivity. We will introduce the main ideas in a constructive way and provide meaningful examples.